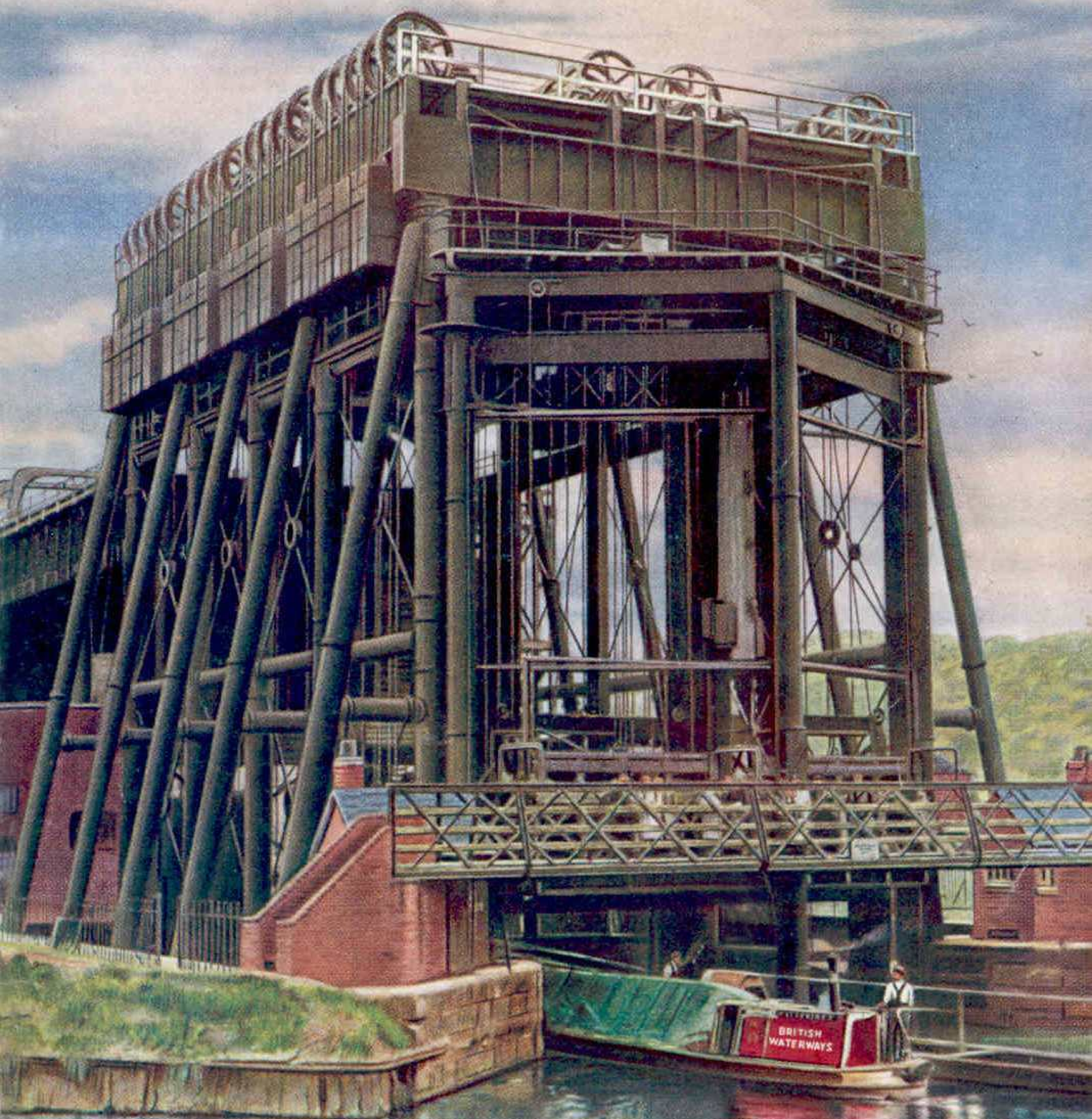


VOL. XXXIV. No. 3.

MARCH 1949

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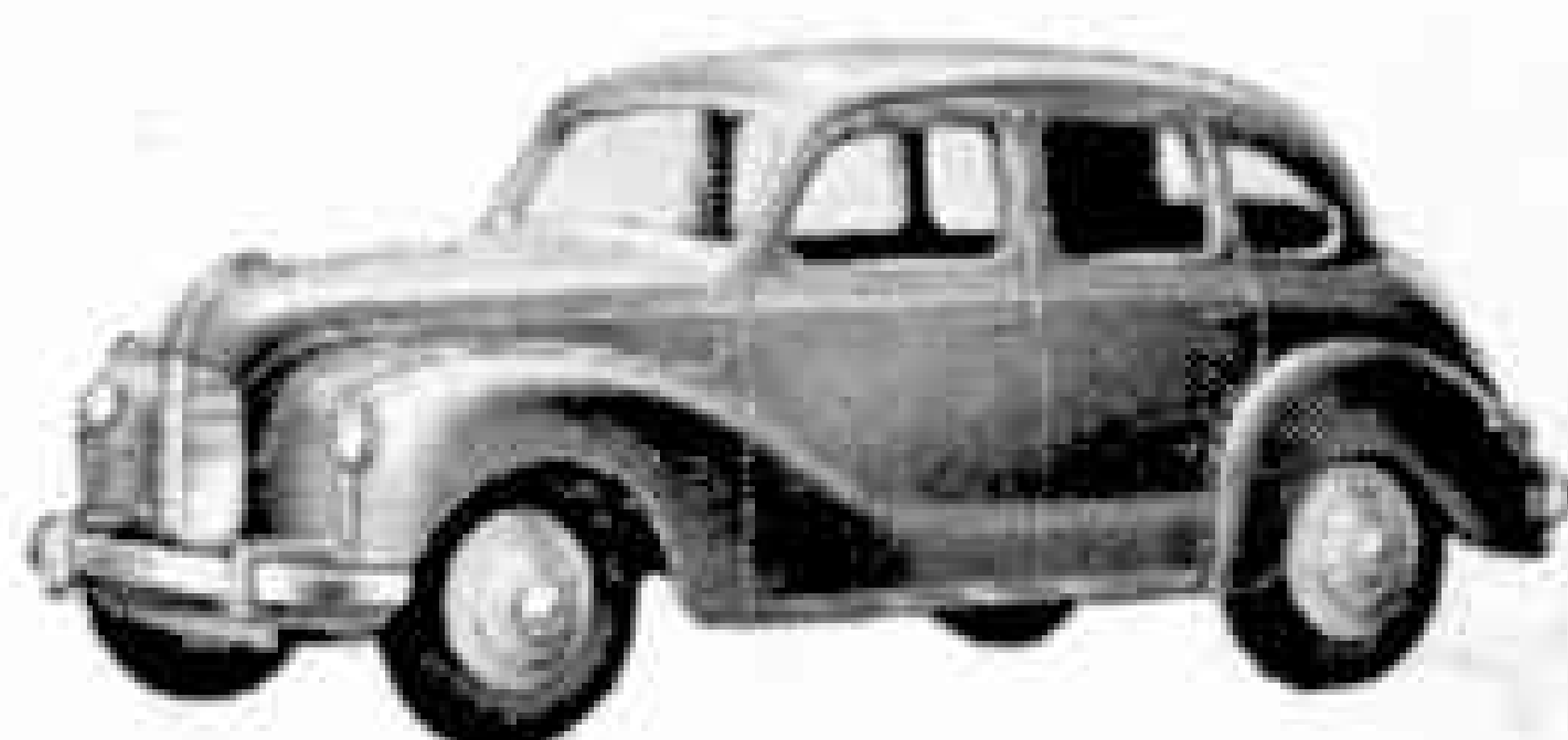
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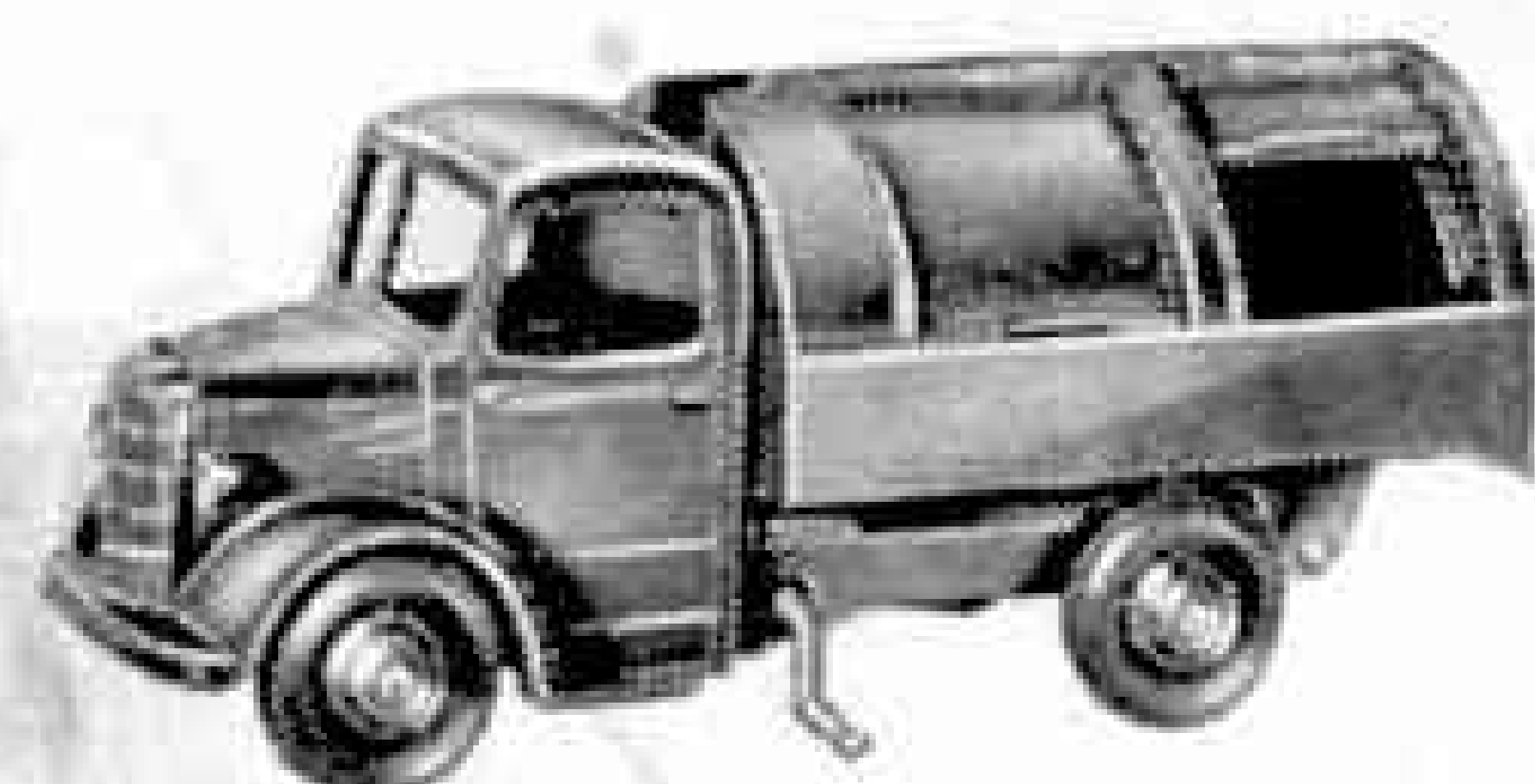
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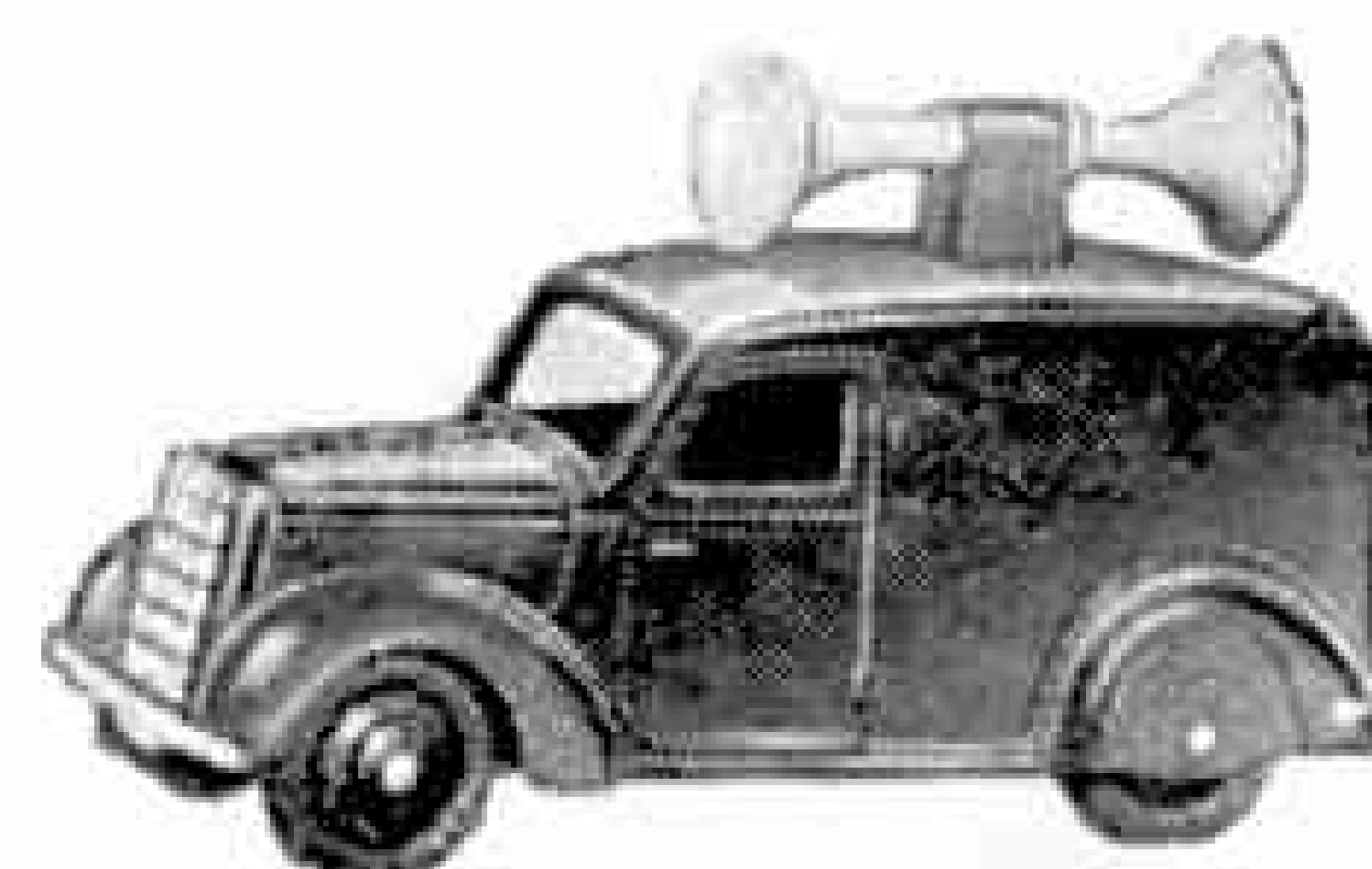
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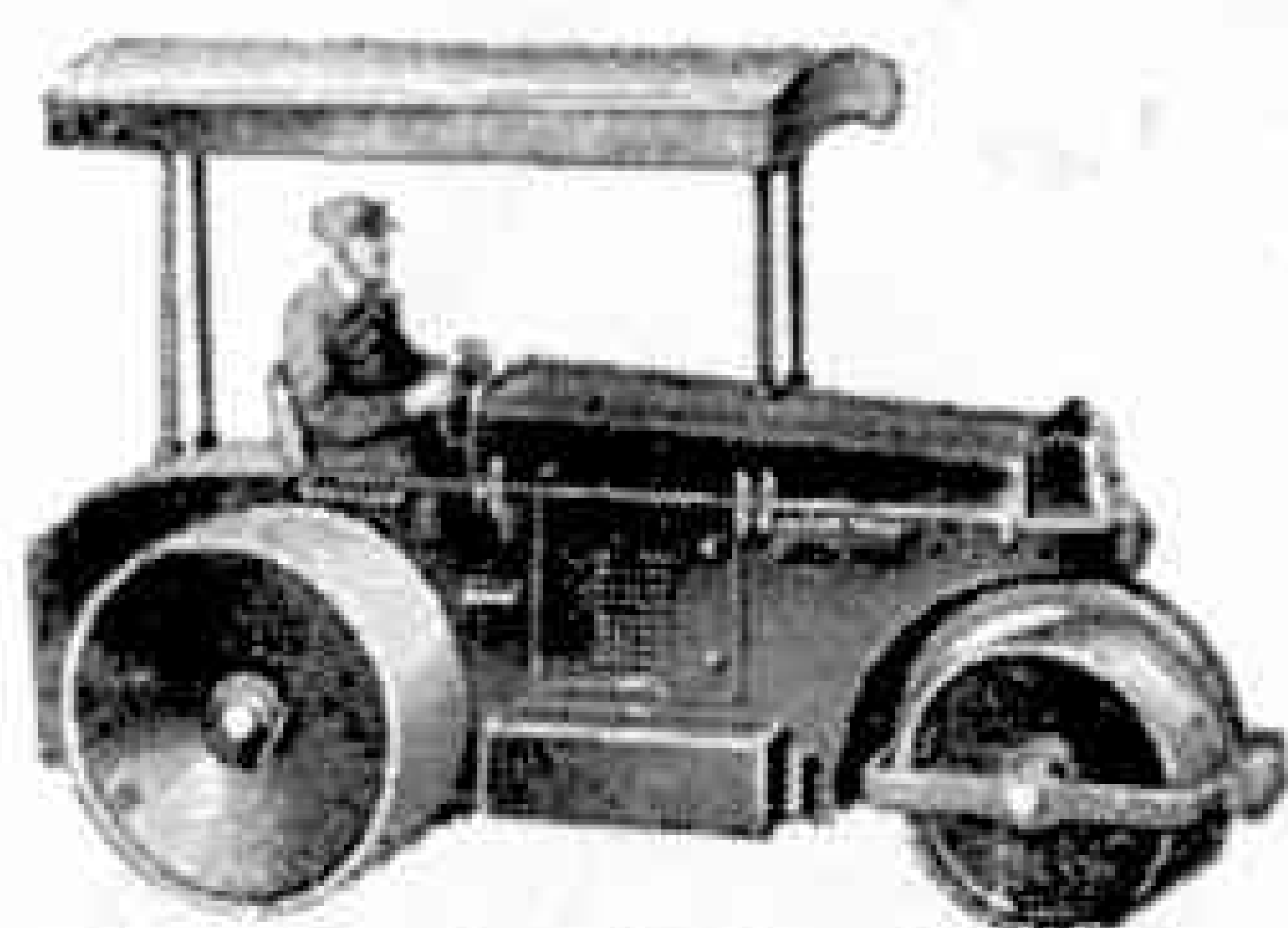
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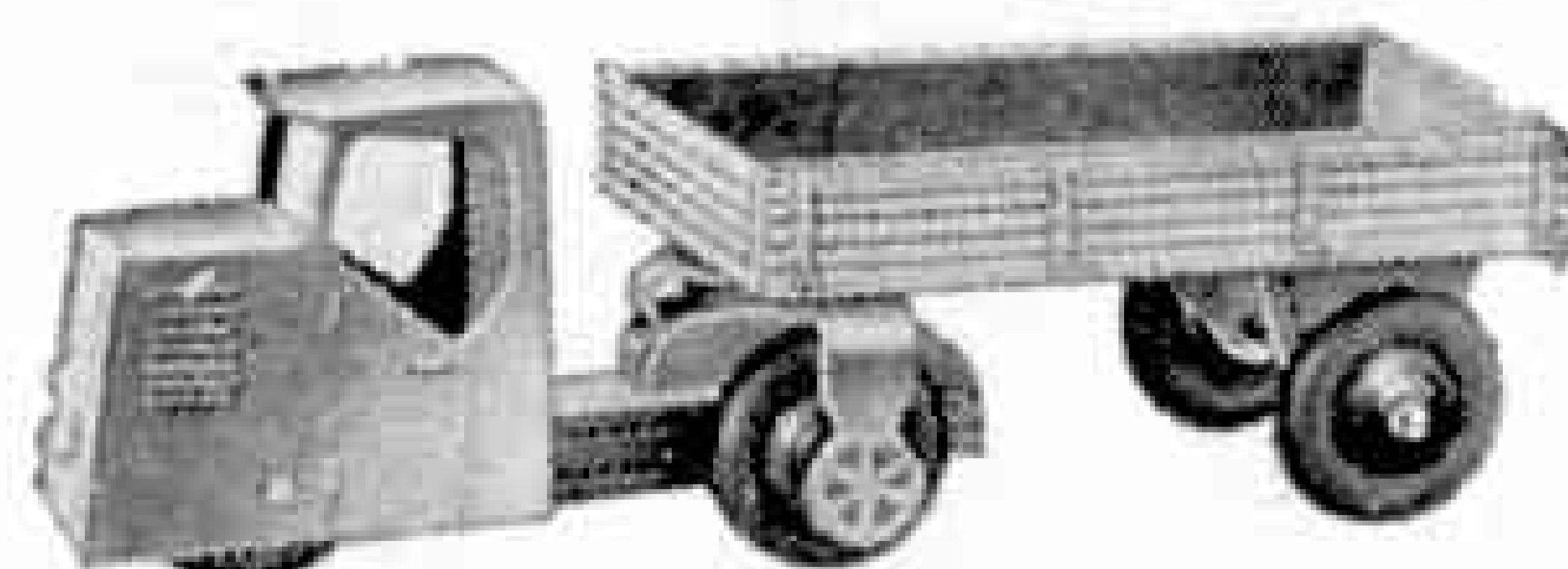
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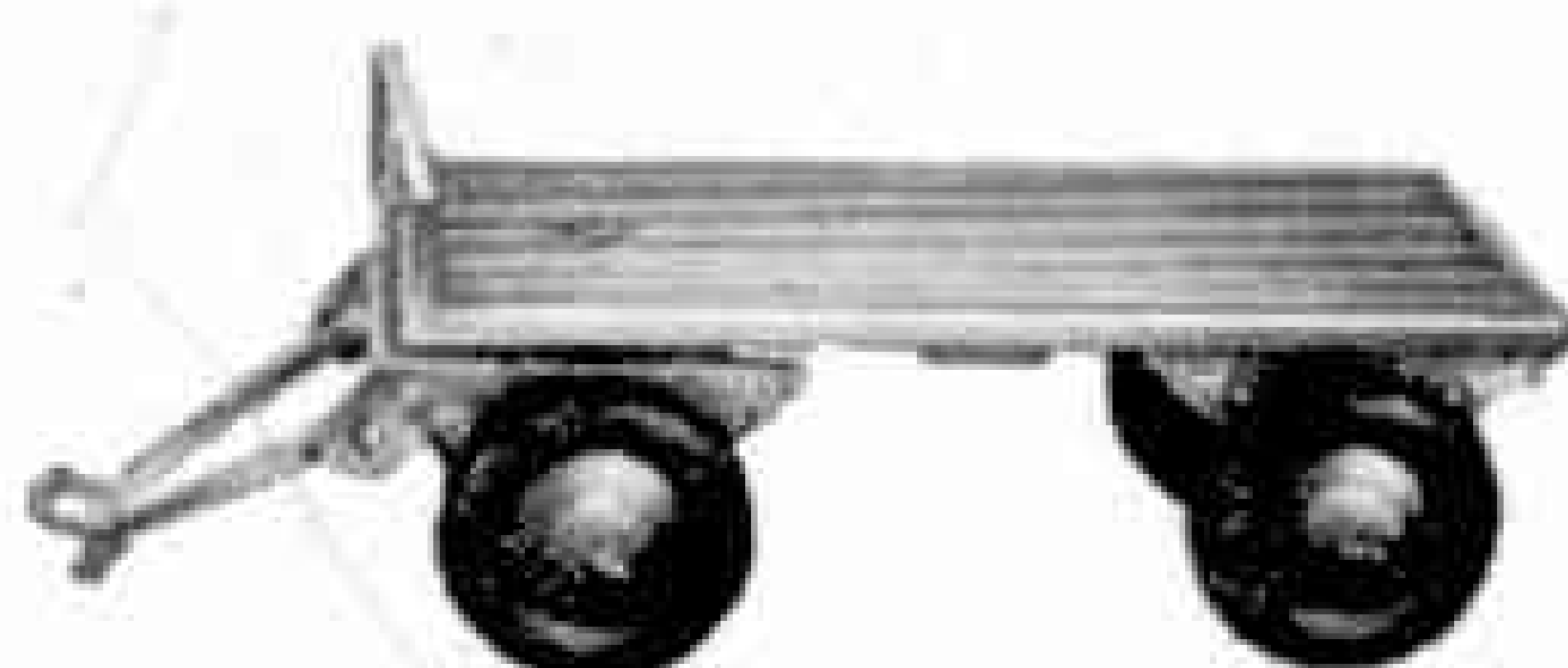
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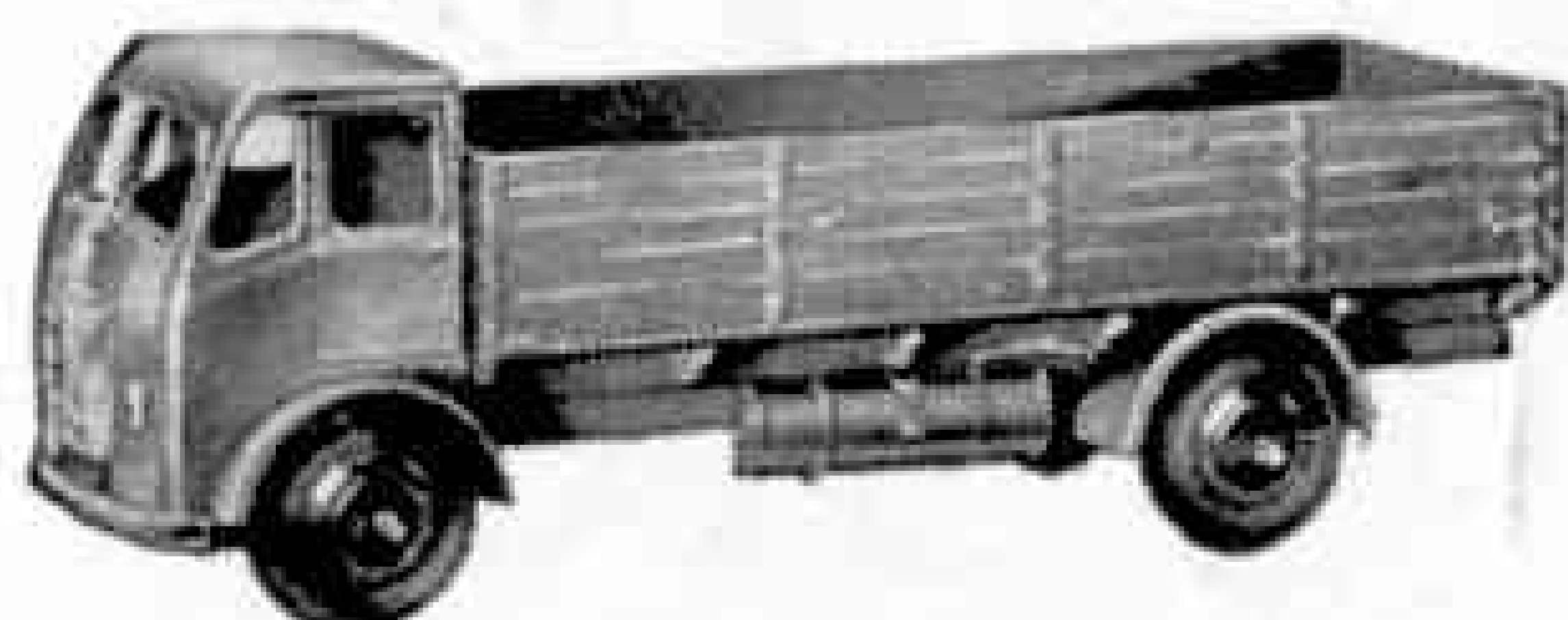
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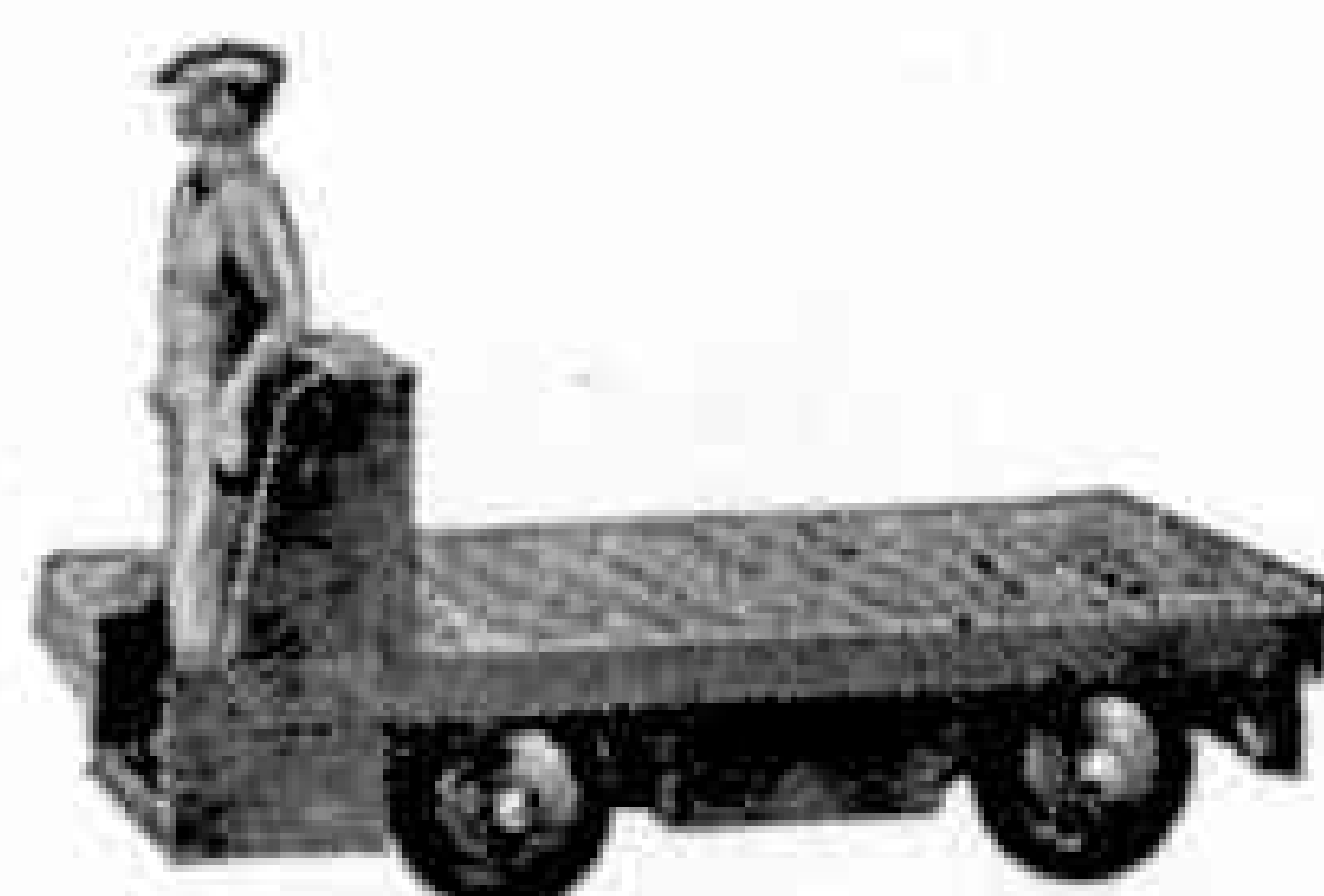
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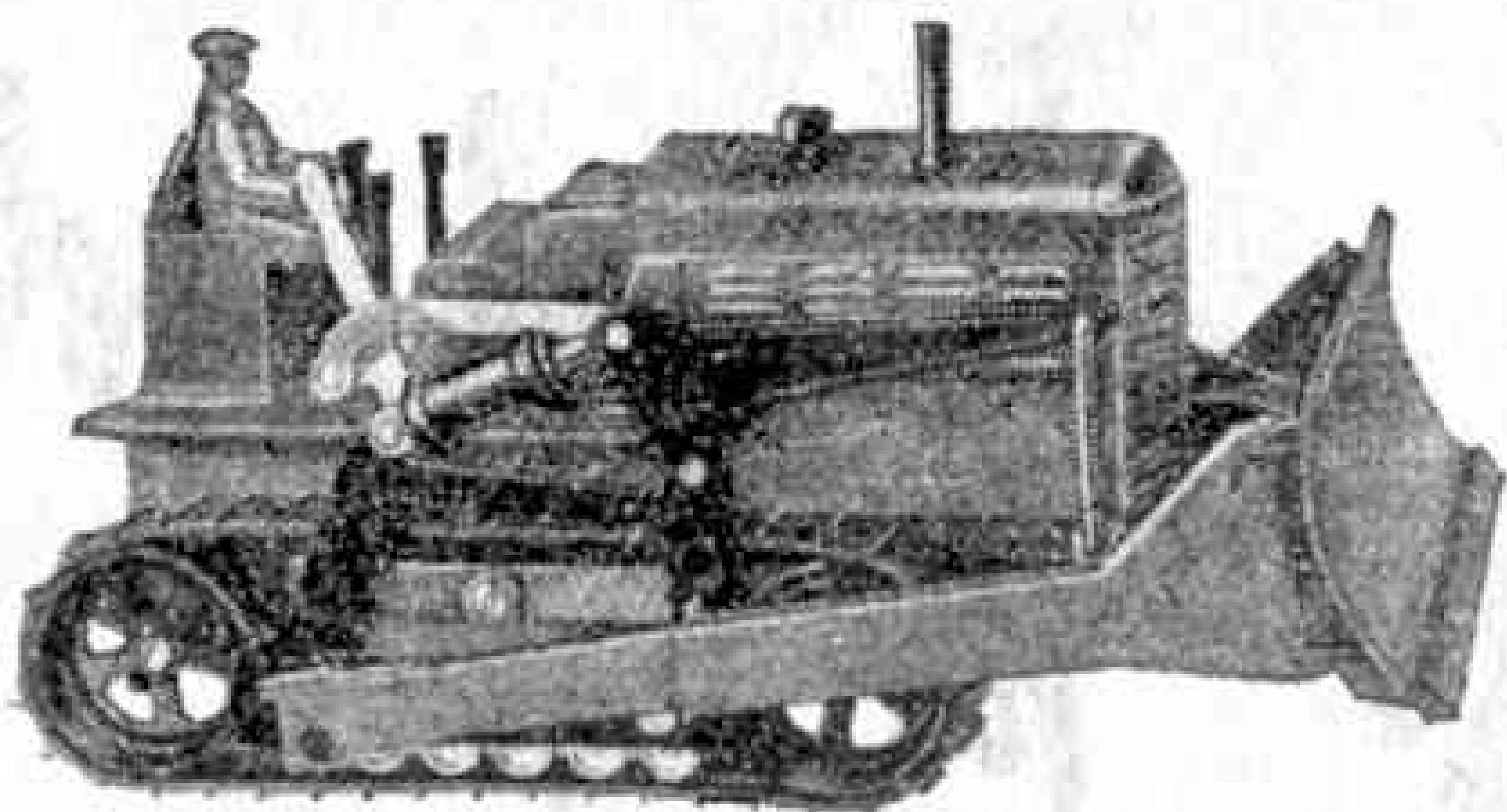


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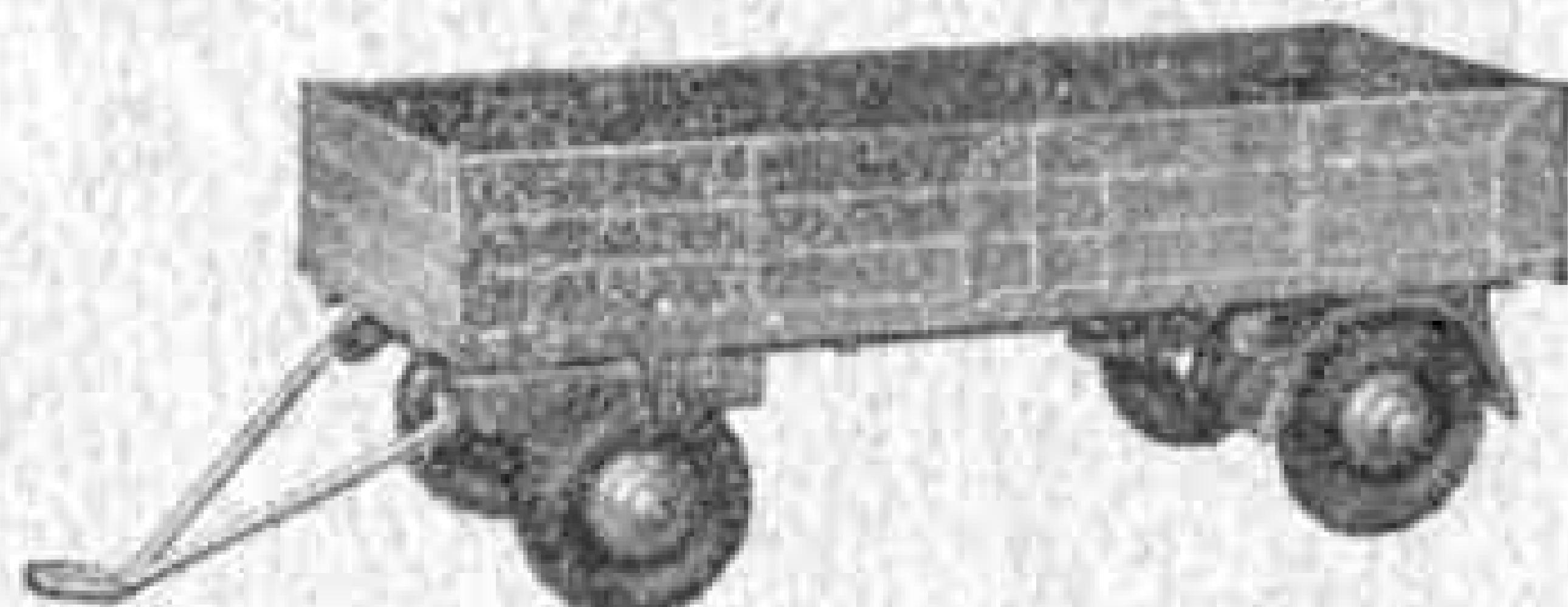
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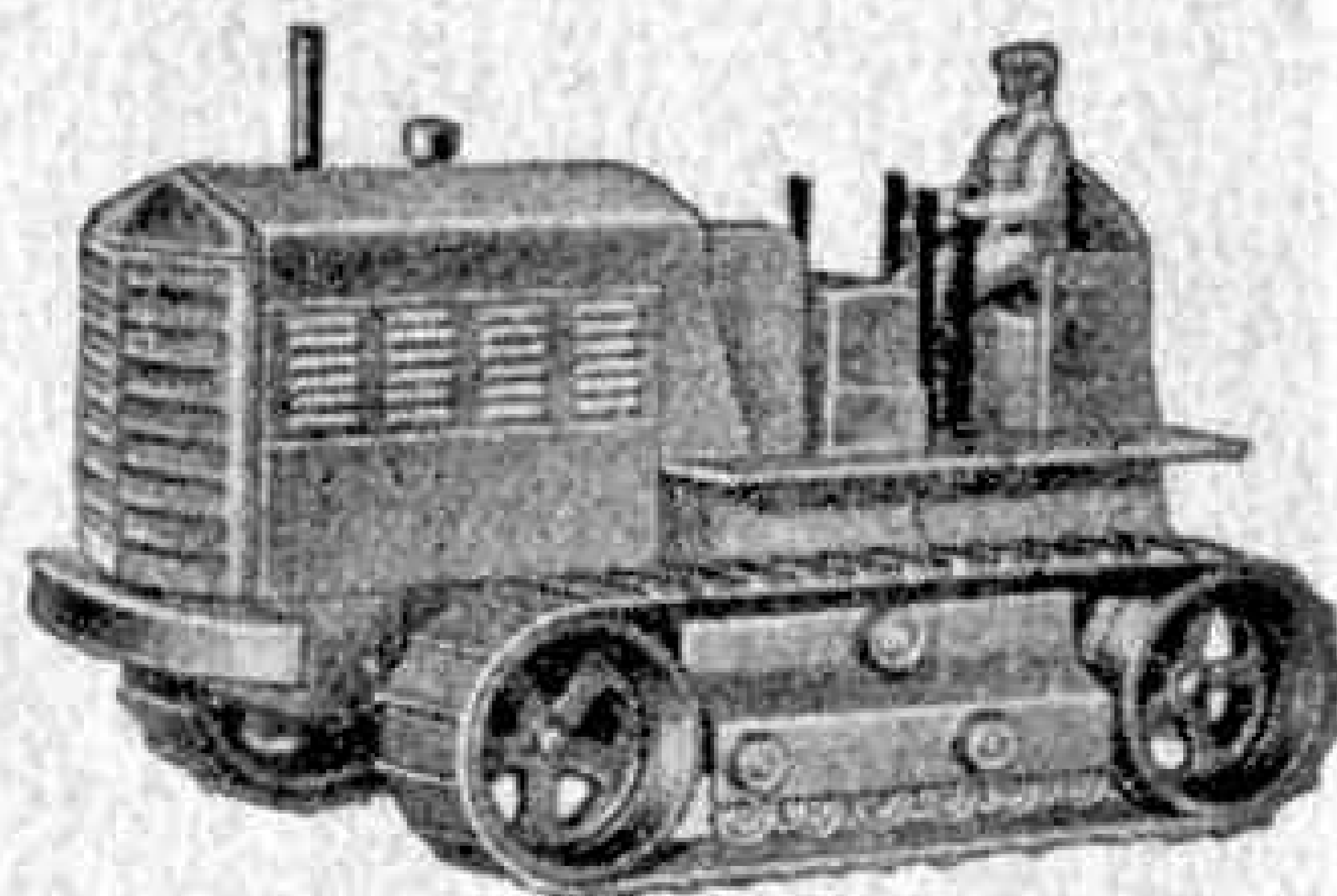
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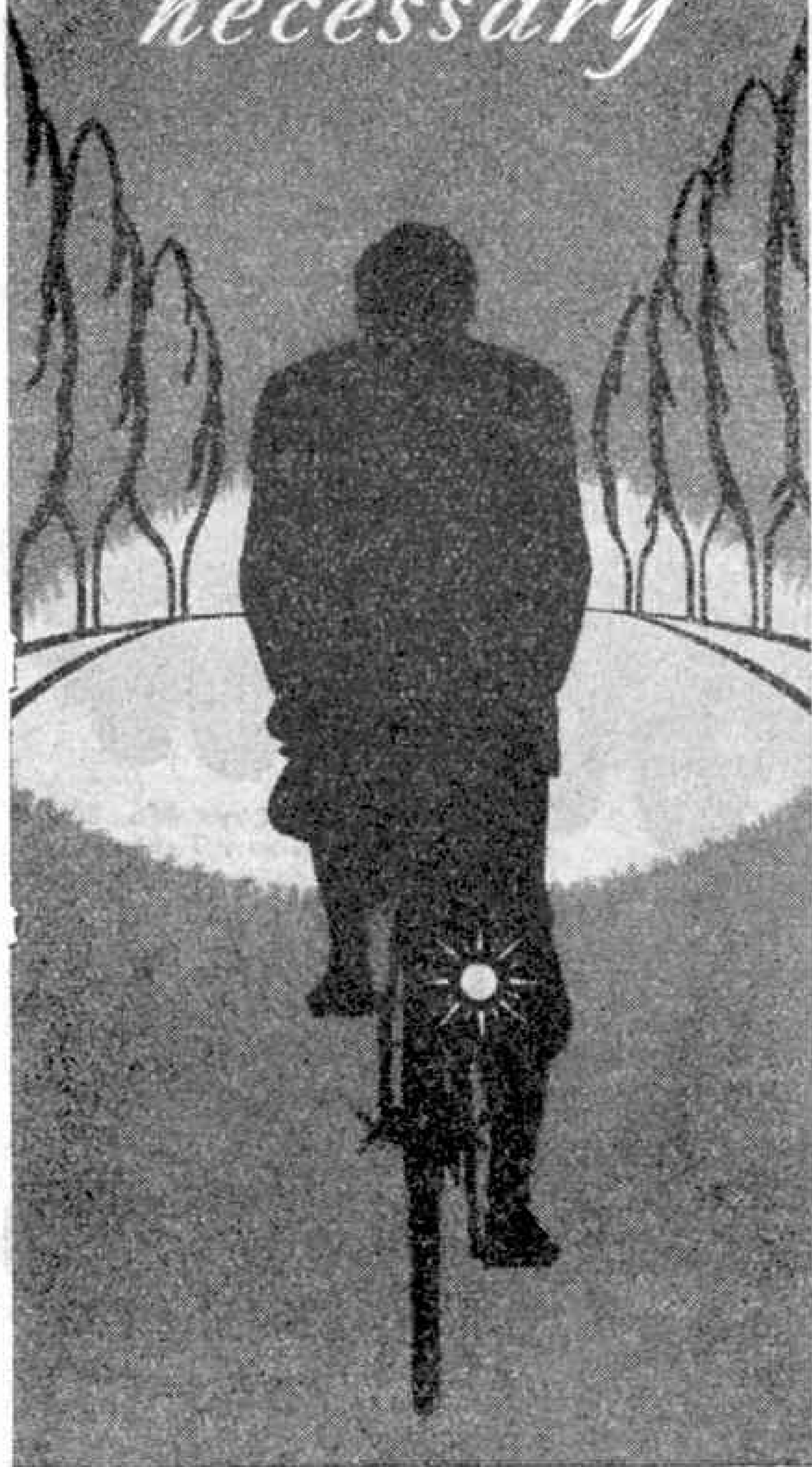


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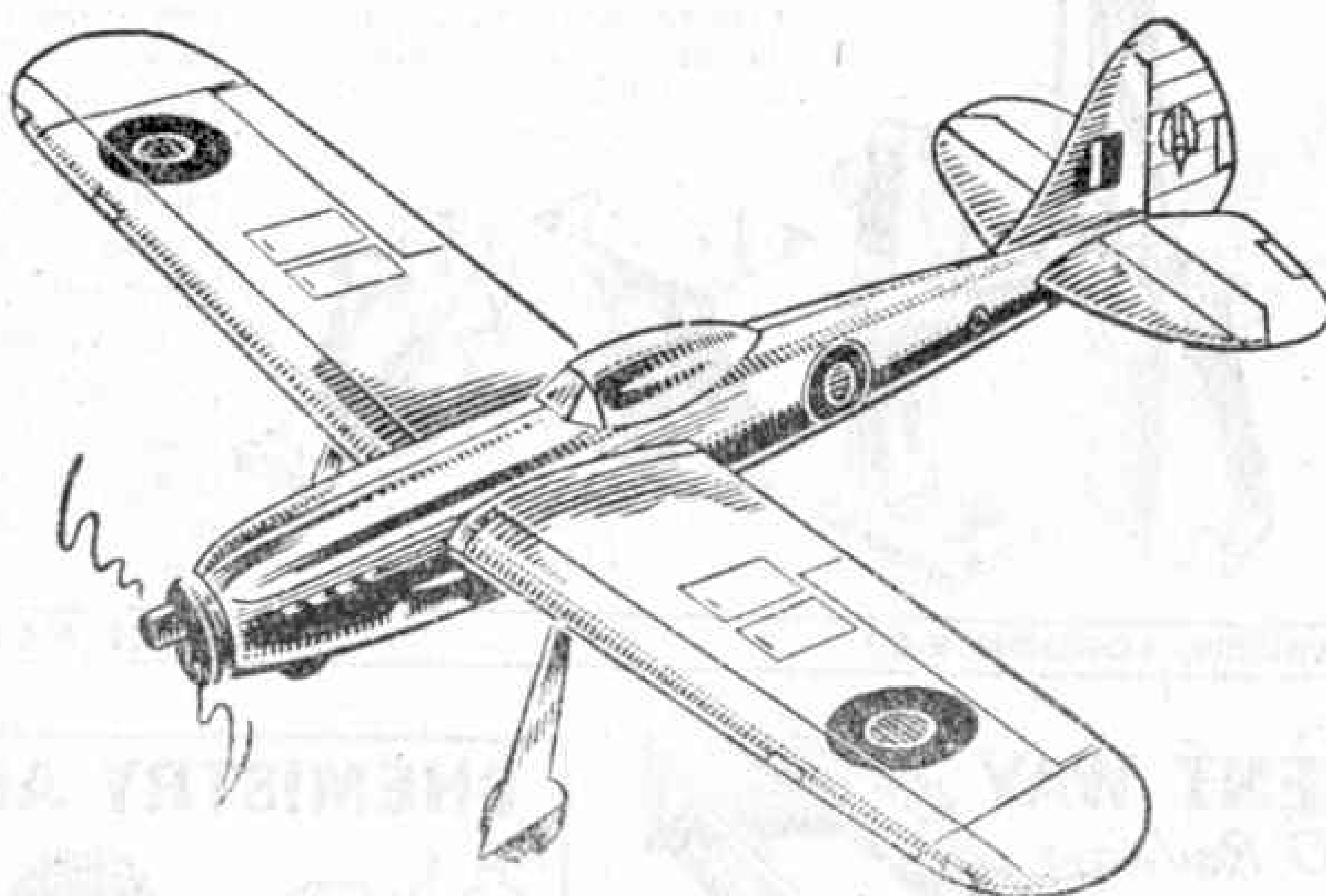


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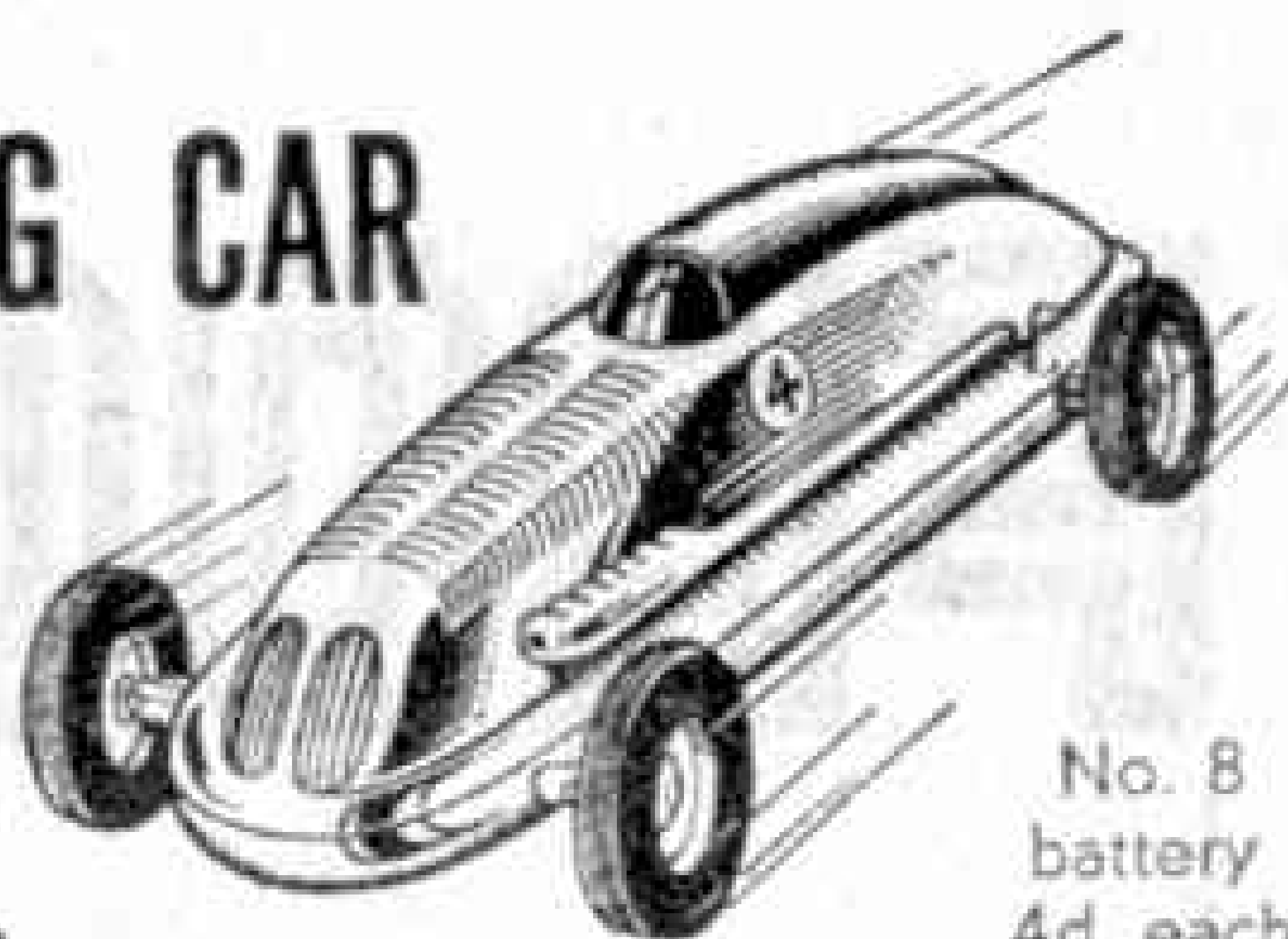
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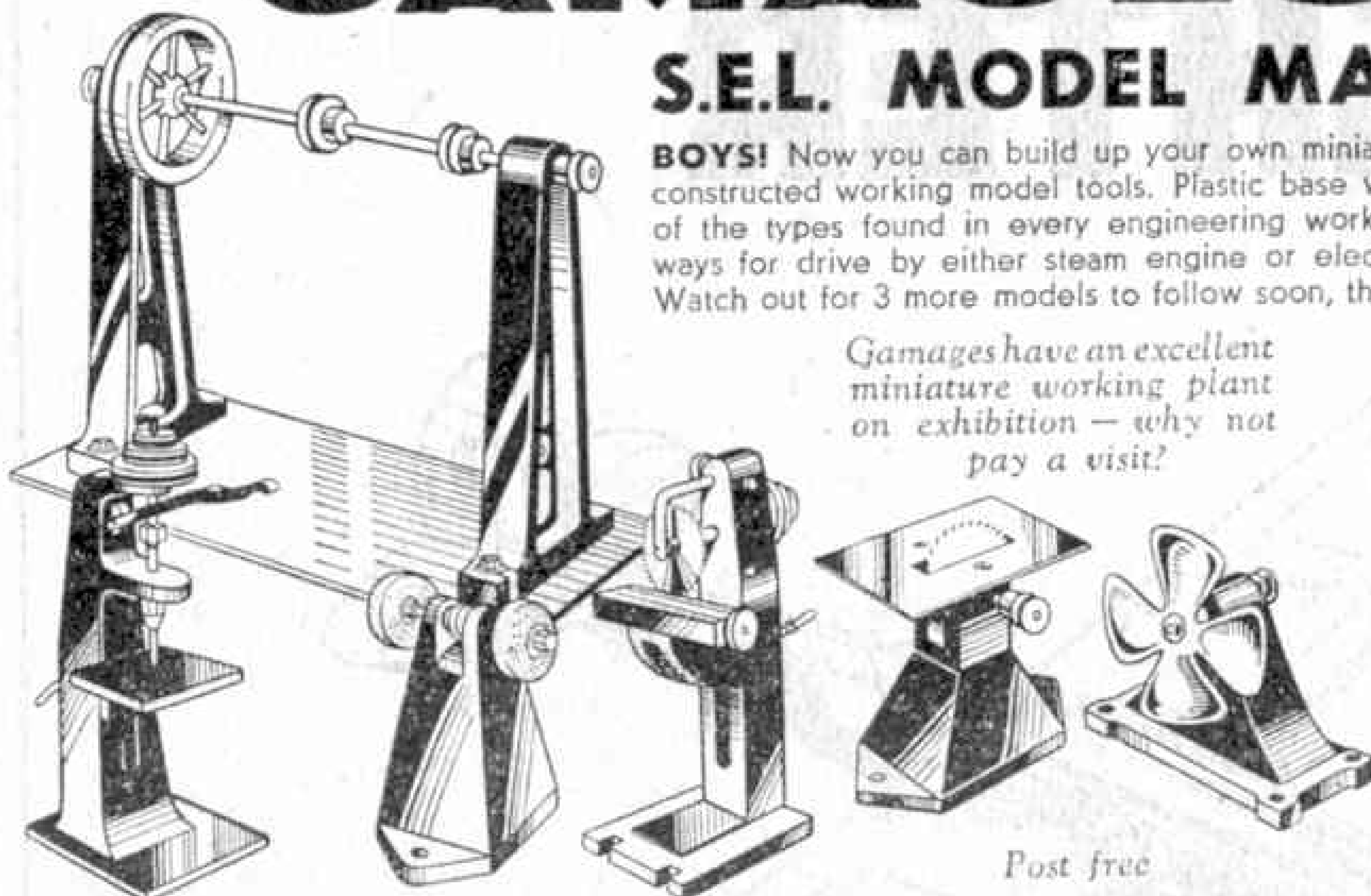


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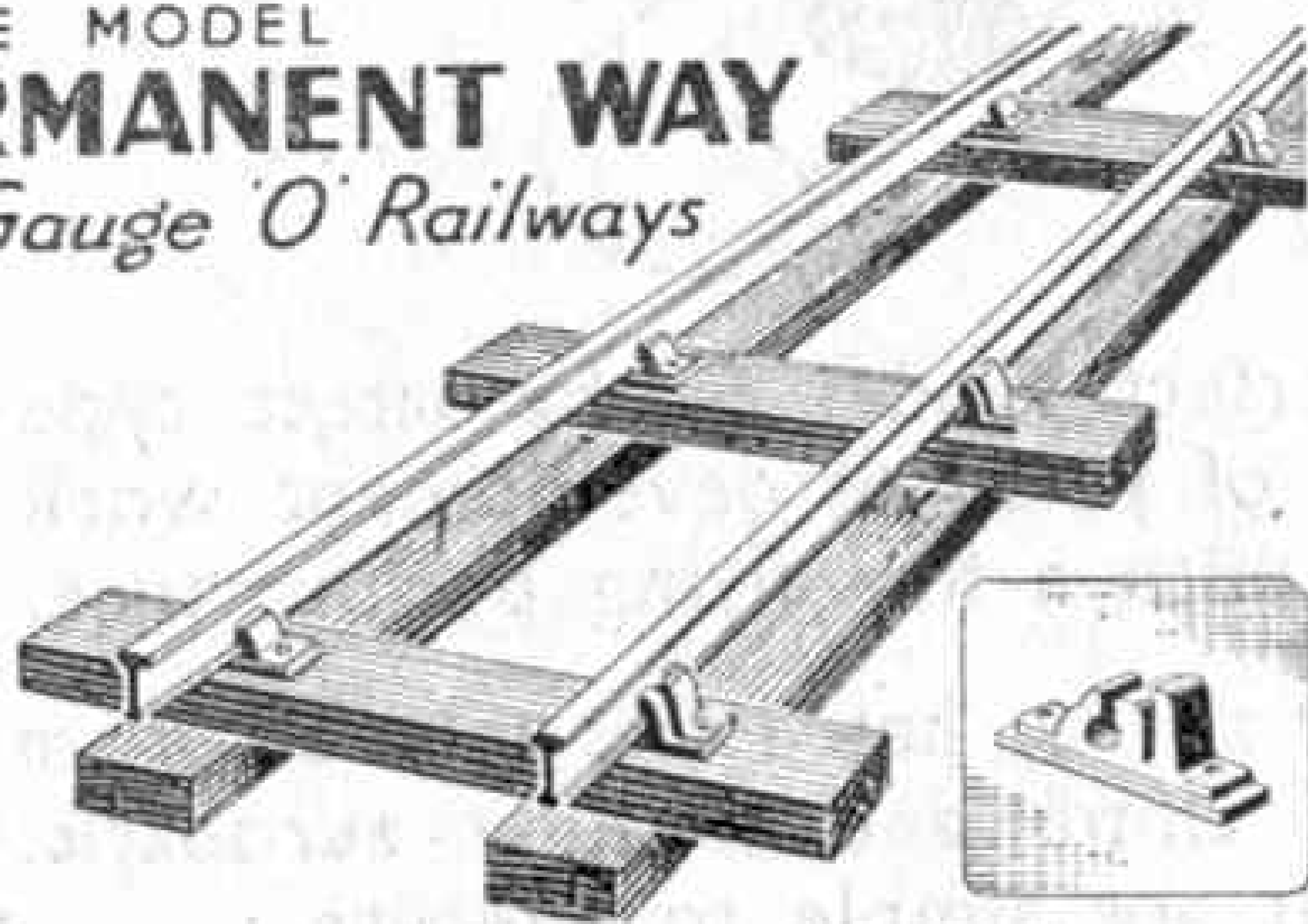
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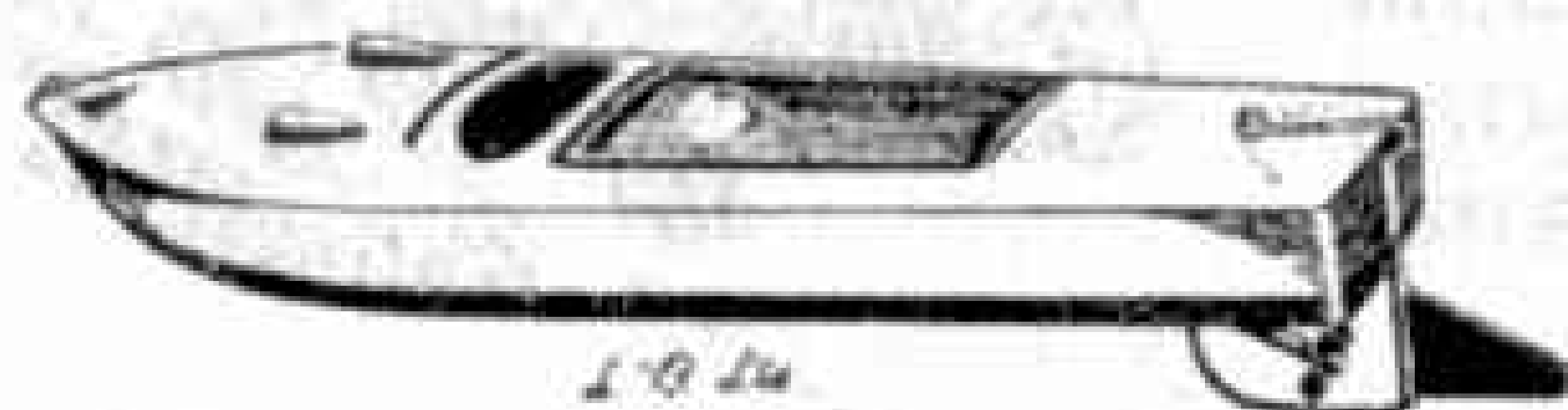
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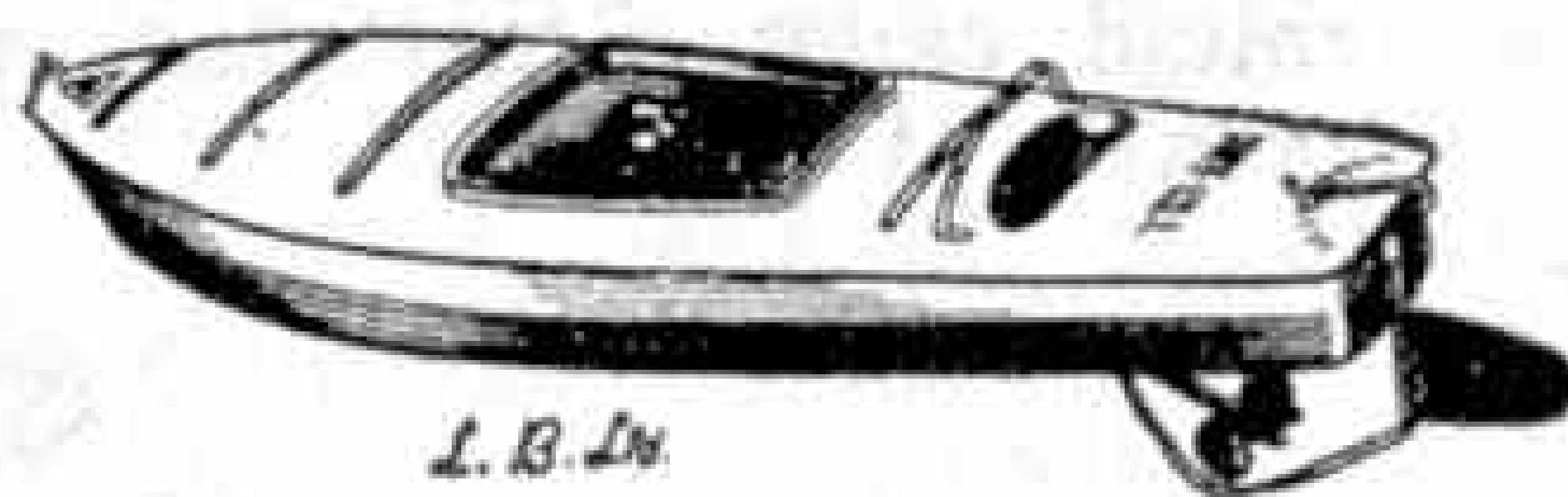


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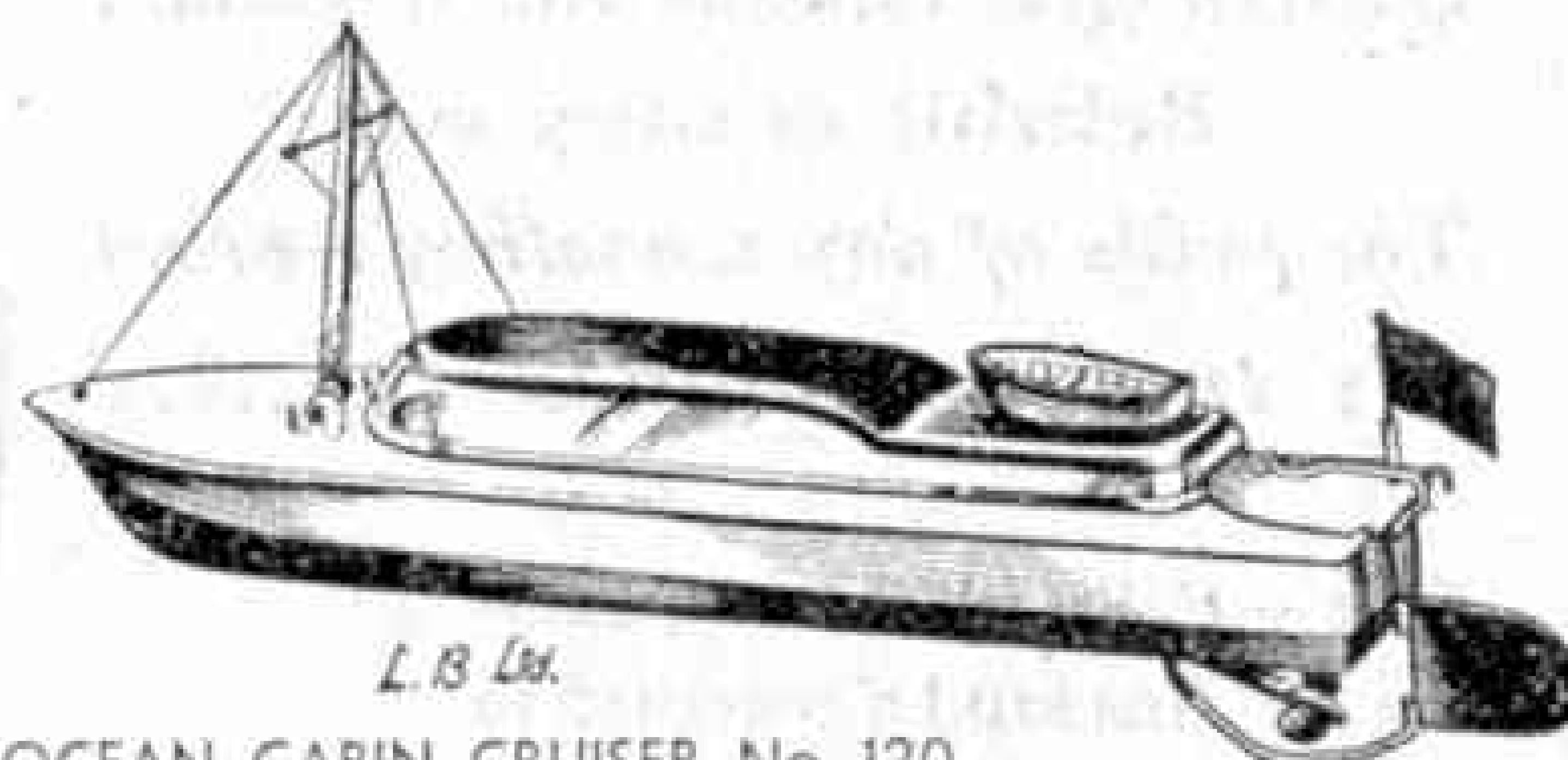
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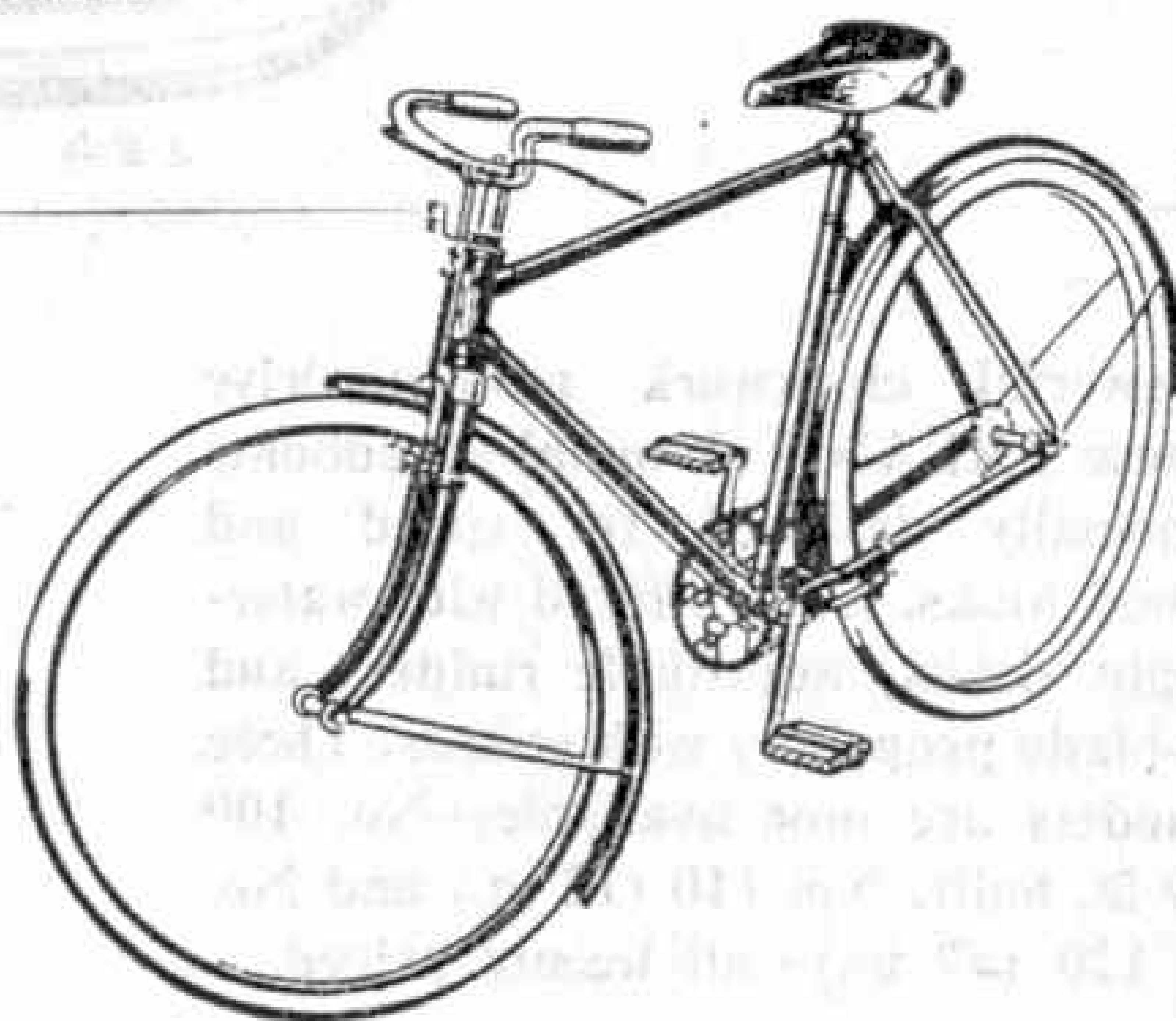
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MAGAZINE

Editorial Office:
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Vol. XXXIV
No. 3
March 1949

With the Editor

British Railways Colours

In "*Railway Notes*" of this issue we give the announcement of the Railway Executive in regard to the colours of British Railways locomotives and passenger stock. In many respects the announcement is vague, but it does away with the fear that has been widely expressed that all future engines were to be black.

Blue is the colour chosen for the heavy-duty types, which presumably will include all classes of 4-6-2s. While dark green has long been a traditional British locomotive colour, many no doubt will regret the passing of the lighter green of the former L.N.E.R. At the same time Western Region supporters will be glad that some at least of their Swindon favourites will have a finish closely resembling that which has distinguished them for so long. There will be many black engines, some with lining and some without. Midland Red, another old favourite, will disappear from the railway scene. Green, as expected, is to be used for electric trains.

Careless Passengers

Last year more than 280 people were prosecuted by the Railway Executive for entering, leaving, or opening carriage doors of trains in motion. It has always seemed to me a most extraordinary thing that passengers should throw open carriage doors when a train is drawing to a stop at a platform, utterly indifferent to the injuries that they may cause to people on the platform. Almost as extraordinary is the habit that some folk display of jumping from a carriage before the train stops, although they are not really in the slightest hurry. Altogether one person is injured every week as the result of carriage doors

being opened before the train stops. A new poster just issued by British Railways draws attention to the danger of this practice and appeals to passengers to "*Please Be Careful.*"

* * * *

"*Night-Flying By Day*" is not the contradiction it seems, but is actually a highly important part of the training of R.A.F. pilots. On page 96 Mr. J. W. R. Taylor describes the research that led to a satisfactory scheme for training pilots for night flying without the nervous strain that previously existed. Next month Mr. Taylor will deal with another very topical subject—the great air lift by which the people of the Western Zones of Berlin are kept supplied with food and equipment.

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Railway Signal Aspects

By H. C. Towers, M.I.E.E., M.I.R.S.E., M.Inst.T.

Deputy Chief Engineer (Signals), Bombay, Baroda and Central India Railway

RAILWAY signalling covers a very wide field in mechanical and electrical engineering. There are often wide differences of opinion between signal engineers as to methods of installing a particular system of signalling, and the kind of material and apparatus to be employed. As an instance, the type of signal aspect is perhaps the most controversial subject in the signalling world. People not connected with railway matters sometimes question the necessity for so many different types of signals and ask why some railways adopt methods so different from

of paramount importance, since it is possible for serious accidents to occur even on a lightly-travelled railway in the event of a badly-sighted signal being missed by a driver.

When signals have a background of trees or buildings, the colour-light signal is the better proposition, since it is most efficient against a dark background. Semaphores are also unsuitable in electrified areas where the overhead system of current collection is in use. The cross bracings of the overhead structures interfere with the sighting of signal arms when

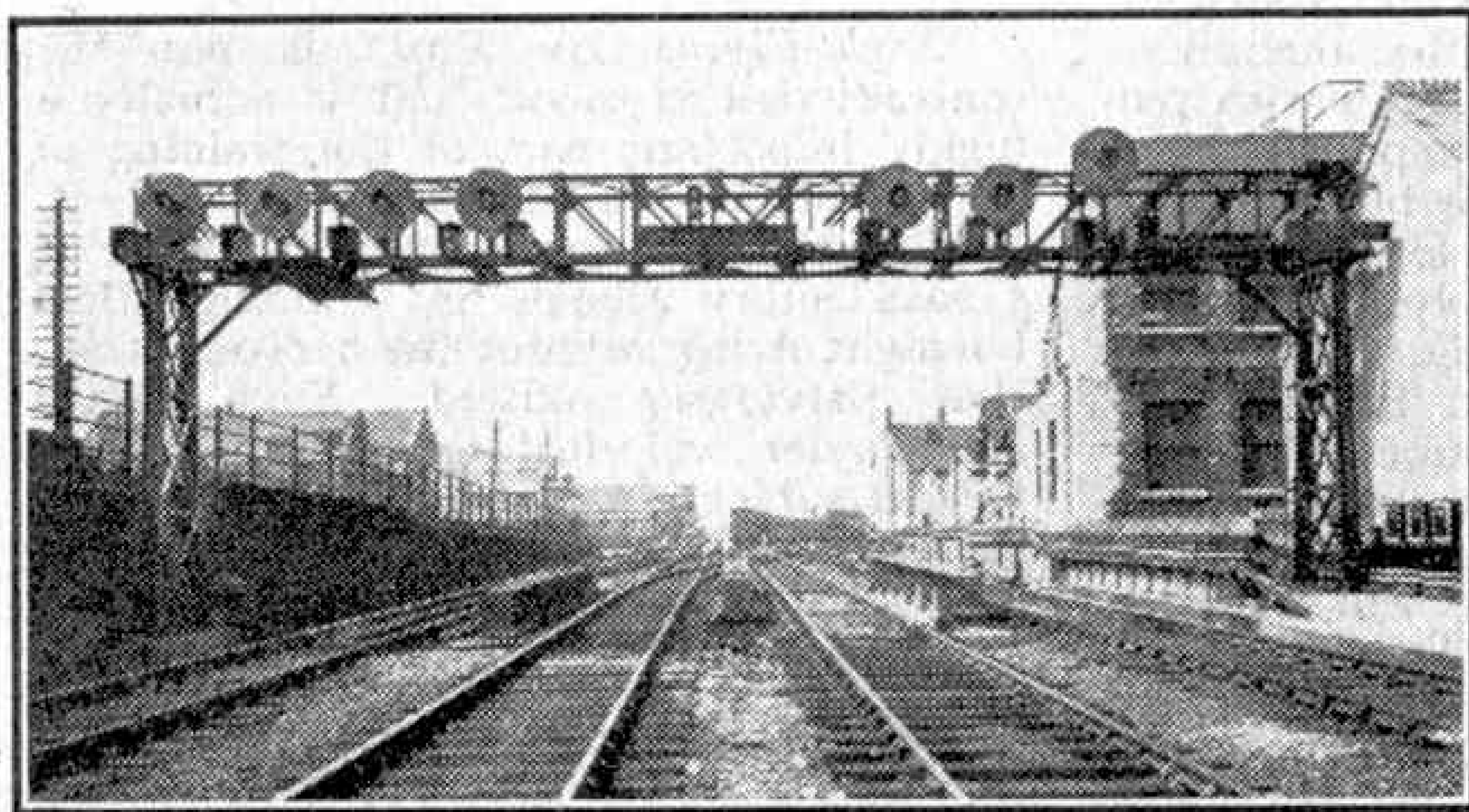
in the "Off" position, so that in adverse atmospheric conditions "phantom" indications are liable to appear.

The colour-light is superior to the semaphore because it has no heavy moving parts, and also it has constancy of aspect. With the semaphore the day indication is by arm position and at night by the exhibition of light. The colour-light gives the same aspect throughout the 24 hours. This signal,

however, cannot be used in remote districts where an electrical supply is not available, unless special arrangements are made. Its installation would depend upon traffic density or special sighting difficulties.

In England the normal equipment for station approach is "Distant," "Outer Home," and "Home" signals. The distant signal is located the full braking distance from the outer home signal. On sighting the distant signal at "Caution" a driver knows that he must be ready to bring his train to a stand at the next signal, if it is at danger. The distant arms are fishtailed, painted yellow with a black fishtailed stripe, and show a yellow or a green light at night. Other arms are red, with a white stripe.

On busy sections of a line, where stations and even signal cabins are frequent, signals are closer together. The distant signal of the next station, or often the next cabin, is frequently found underneath



A gantry of searchlight signals at Cardiff. British Railways Official photograph.

others. An attempt is made in this article to offer some explanation for these differences, though only of a general nature and with reference to British practice.

The type of aspect to be employed is generally governed by situation and not by the system of signalling in use. For example, the familiar semaphore signal cannot be used in a tunnel or other places where clearances will not permit it. A light signal is the only solution here.

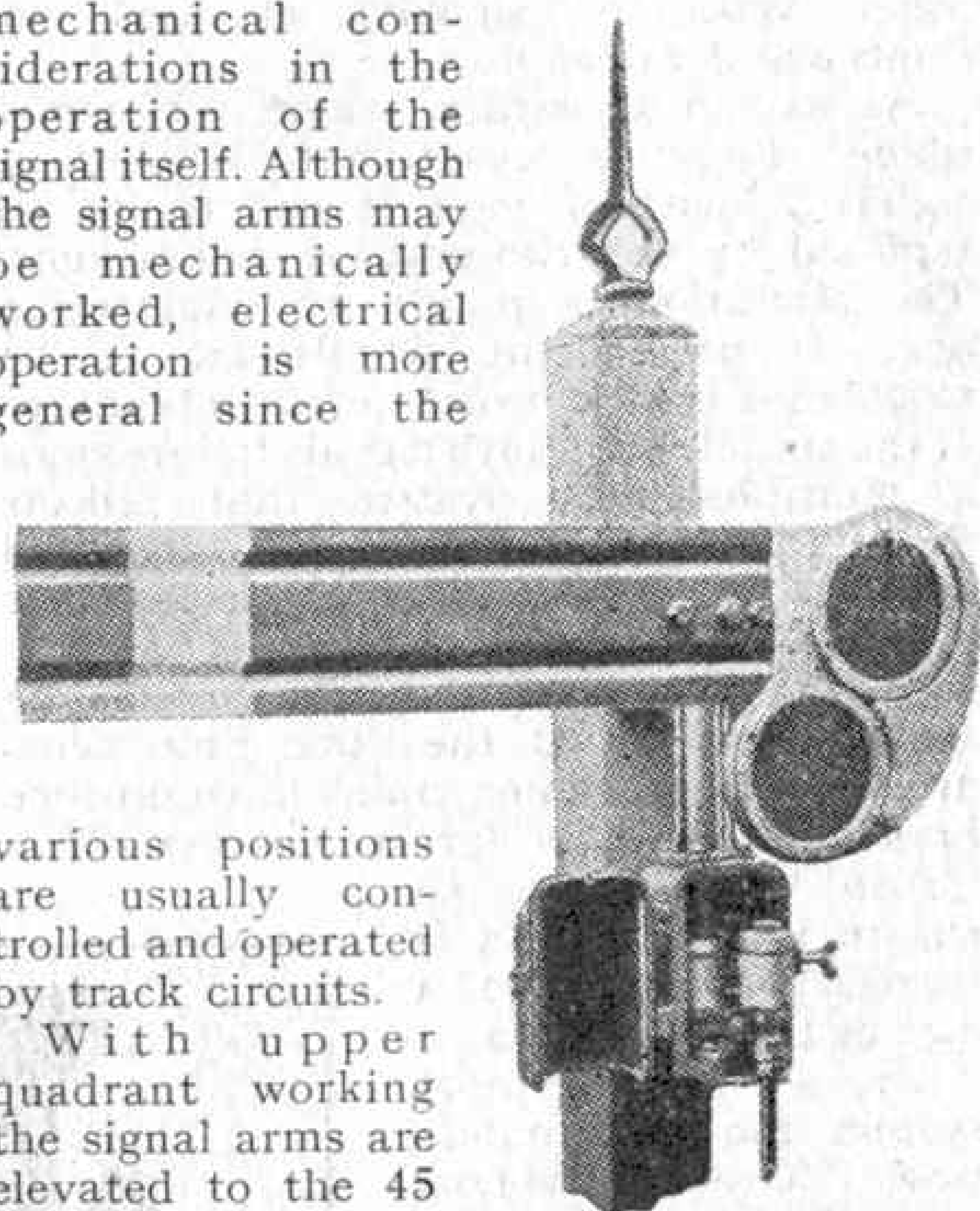
The semaphore is one of the most widely used signals in the world and, subject to certain limitations, is very efficient. When it is correctly positioned with regard to background and approach, very considerable sighting distances can be obtained under favourable atmospheric conditions. The night aspect, usually consisting of red and green lights, can also give excellent sighting distances if the oil lamps are well trimmed and maintained. The sighting of signals is

the starting signal of the previous station. The starting signal is the one at the platform end; this permits the train to start, hence its name. On some sections matters are even more complicated than this, which makes the interpretation of aspects a burden for the engine crew.

This difficulty is avoided by three-aspect signalling. In this system every signal becomes a distant signal in that it reflects the condition of the next signal ahead. The semaphore arms have three positions, horizontal, inclined upward at 45 degrees, and vertical. The driver receives two indications before approaching a "Stop" signal. The vertical position shows that the next signal ahead is either at the vertical indication, or inclined at 45 degrees, so that there is no immediate need to reduce speed. If the next signal ahead is sighted at 45 degrees the driver reduces speed and brings his train under such control as to be able to come to a stand at the "Stop" signal. The night indications are red, yellow and green.

Three-aspect signalling has been tried with the 45 degrees and vertical positions in the lower quadrant. It was unsatisfactory because the vertical position did not give a good indication and because of

mechanical considerations in the operation of the signal itself. Although the signal arms may be mechanically worked, electrical operation is more general since the

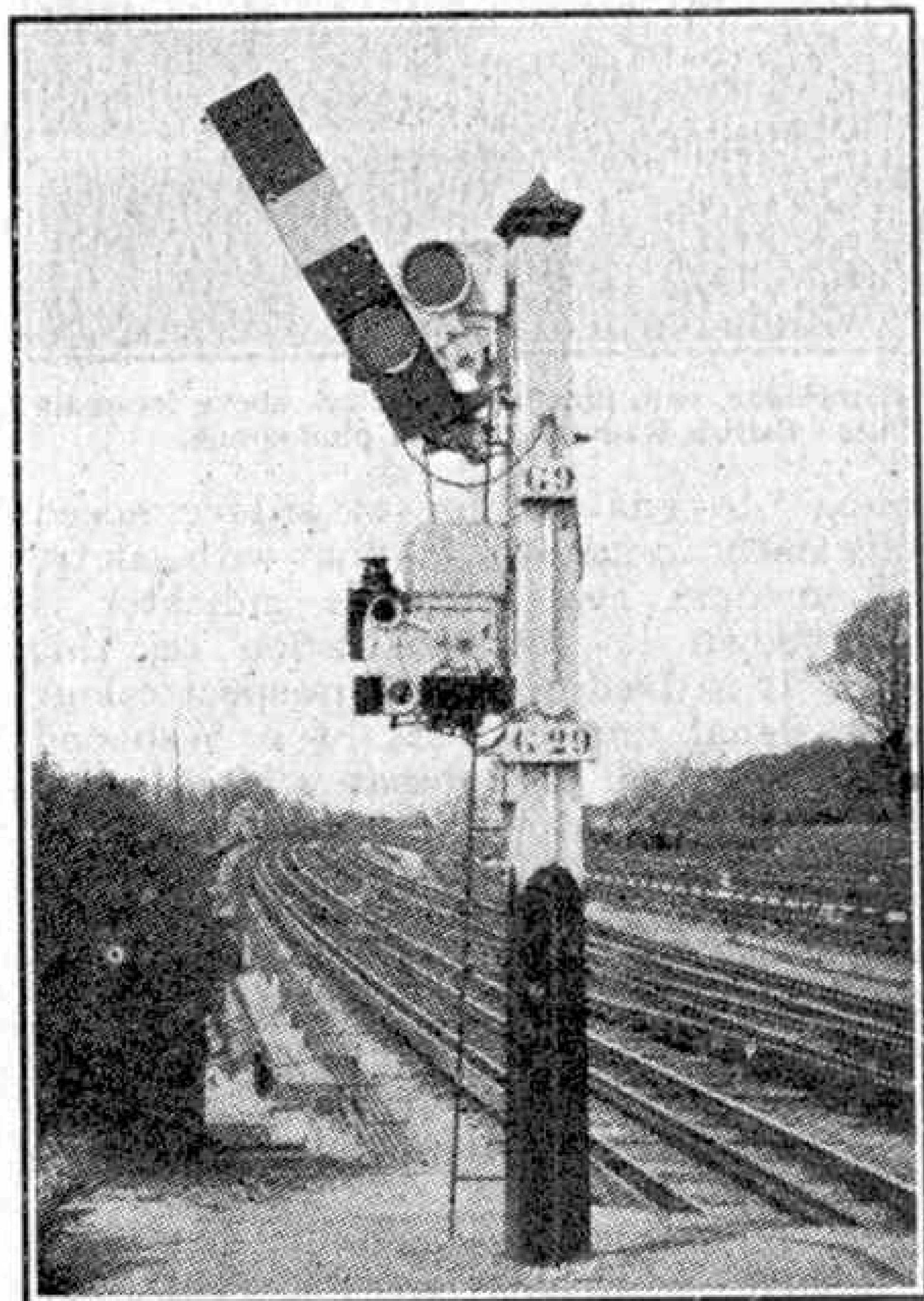


An electro-pneumatic semaphore signal as used on some sections of the London Transport lines.

various positions are usually controlled and operated by track circuits.

With upper quadrant working the signal arms are elevated to the 45 degrees and vertical positions by an electric motor which is usually fixed at the top of the signal mast and drives the arm through gears. On the signal being released from the vertical position to restore it to "Danger," the arms falls by gravity. On signals operated from signal boxes, the energy developed by the arm returning to "Danger" is used to drive the signal motor as a generator and so return current to the signal cabin in the form of an indication circuit to inform the signalman that the signal has correctly returned to the "Danger" position. Therefore, with upper quadrant working, the return of the signal arm to the "Danger" position is positive, and there is little likelihood of it remaining in a false "Clear" position, except possibly under very severe conditions of ice or snow.

Where railways are required to be signalled for high speeds and where traffic is dense, the three-aspect system has limitations. The introduction of four or even five aspects permits a driver to run at the maximum speed permissible in the section, having regard to engineering considerations, and yet at the same time to receive early indication of the condition of the line ahead with full braking distance available. The application of more than three positions to the semaphore signal is difficult and cannot be applied, except in conjunction with



An electrically-operated semaphore signal of the upper-quadrant type.

other types of signals, as used on Continental railways.

As explained earlier, where the semaphore signal is unsatisfactory from a sighting point of view it can easily be replaced by the two-position colour-light. The alteration is purely an engineering one. If colour-light signals are to be installed it is more usual to take advantage of the simplicity of such signals to introduce a multiple-aspect system that reflects the condition of the next signal ahead as soon as the line is clear as far as that signal. The greater number of aspects used the closer together can signals be spaced, and yet at the same time allow drivers of fast-running trains to commence braking sufficiently far in the rear of a "Stop" indication to ensure that the train is correctly brought to a halt at that indication.

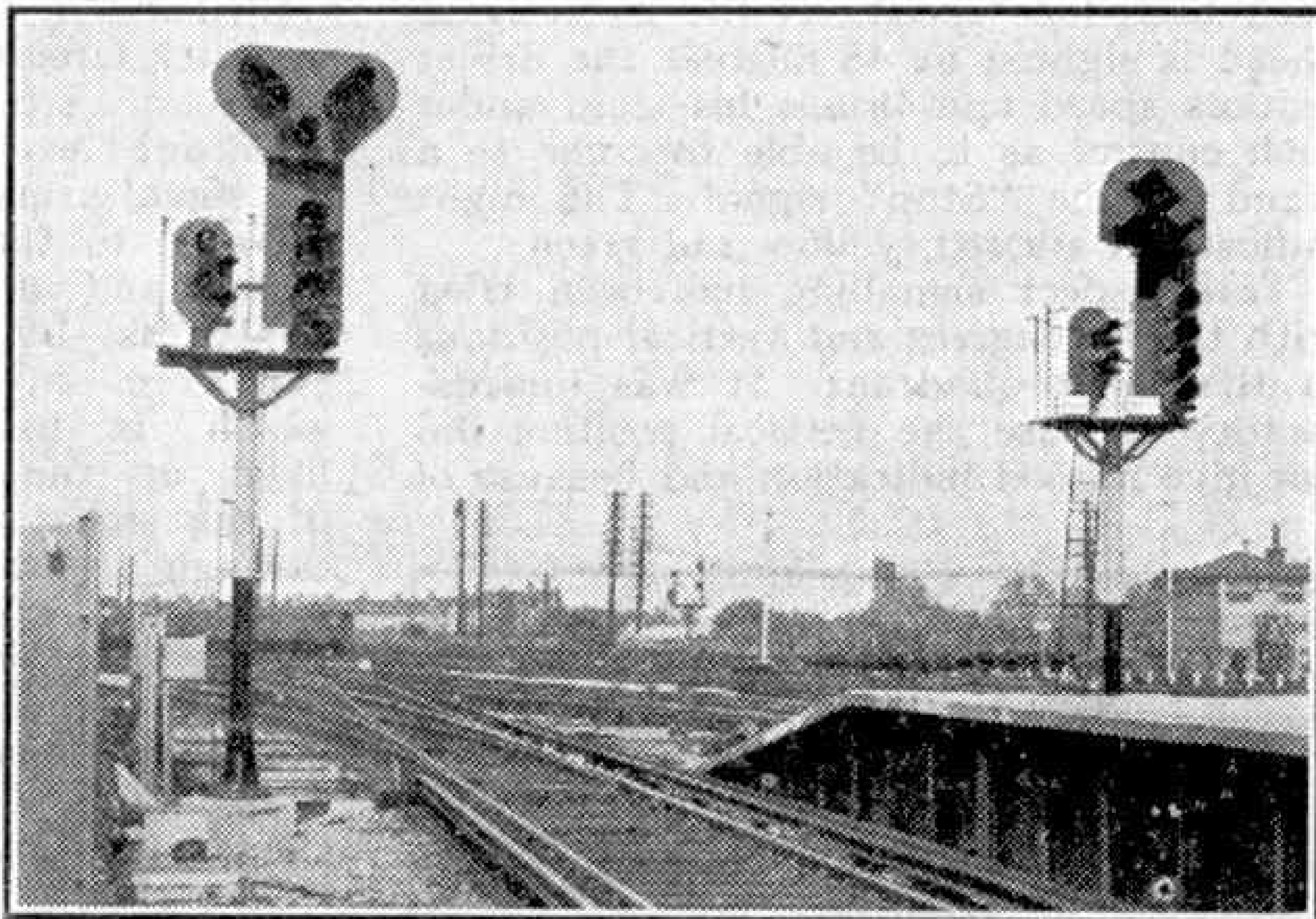
In a four-aspect system the first indication, "Green," means proceed at normal speed. In the event of the fourth signal ahead being at "Stop," the next signal encountered would display two yellow lights warning the driver that he should reduce speed. Assuming the aspect of the fourth signal is still at "Stop," the third signal would display one yellow light, by which time the driver would now have his train completely under control and be prepared to halt at the "Stop" aspect. Sometimes the lights are arranged in the form of a circle. These signals are known as cluster lights.

In addition to giving ample warning to train drivers of the condition of the line ahead, it is also necessary, when approaching stations, to indicate if the train is to be received on the main line or diverted to other lines. It is obvious that a train cannot be allowed to travel over points set for a diverging route at the same speed as for the straight line.

In semaphore signalling these indications are conveyed by means of a number of arms mounted on "dolls" or short posts attached to a main post. The arm of the tallest post applies to the main line. The next tallest, the first to the left, or right, and so on. In large station yards,

where several such bracket signals may be necessary, matters become complicated and signal indications difficult to follow.

To overcome this difficulty one signal only is often used, located at the outermost points. A route indicator underneath the signal exhibits a number when the signal is "Off," which corresponds with the road number into which the train is to be received. These indicators are very suitable for medium speeds. They cannot be used when it is necessary to inform drivers of fast-moving trains that they are to be diverted from one line to another, on account of their sighting distance being relatively small. If the driver of a fast train is to be diverted from one line to another he must be informed early



Colour-light signals at Wimbledon, with junction indicators above for main and diverging lines. British Railways Official photograph.

enough to enable him to reduce speed sufficiently to take the turnout with safety.

A modern type of route indicator is also shown in the illustration on this page. It is fixed over a four-aspect colour light signal and consists of a V-shaped arrangement of five lunar white lights, three only of which are illuminated to indicate a route. Thus if a route to the extreme left were set up, the centre white light would be illuminated, and the two on the left arm of the "V" and so on.

Some engineers have advocated the abolition of signals altogether in favour of a complete system of automatic train control whereby the driver would be absolved from all responsibility regarding obedience to signal aspects. This has been done on the Post Office tube railway, but this line carries only mail.

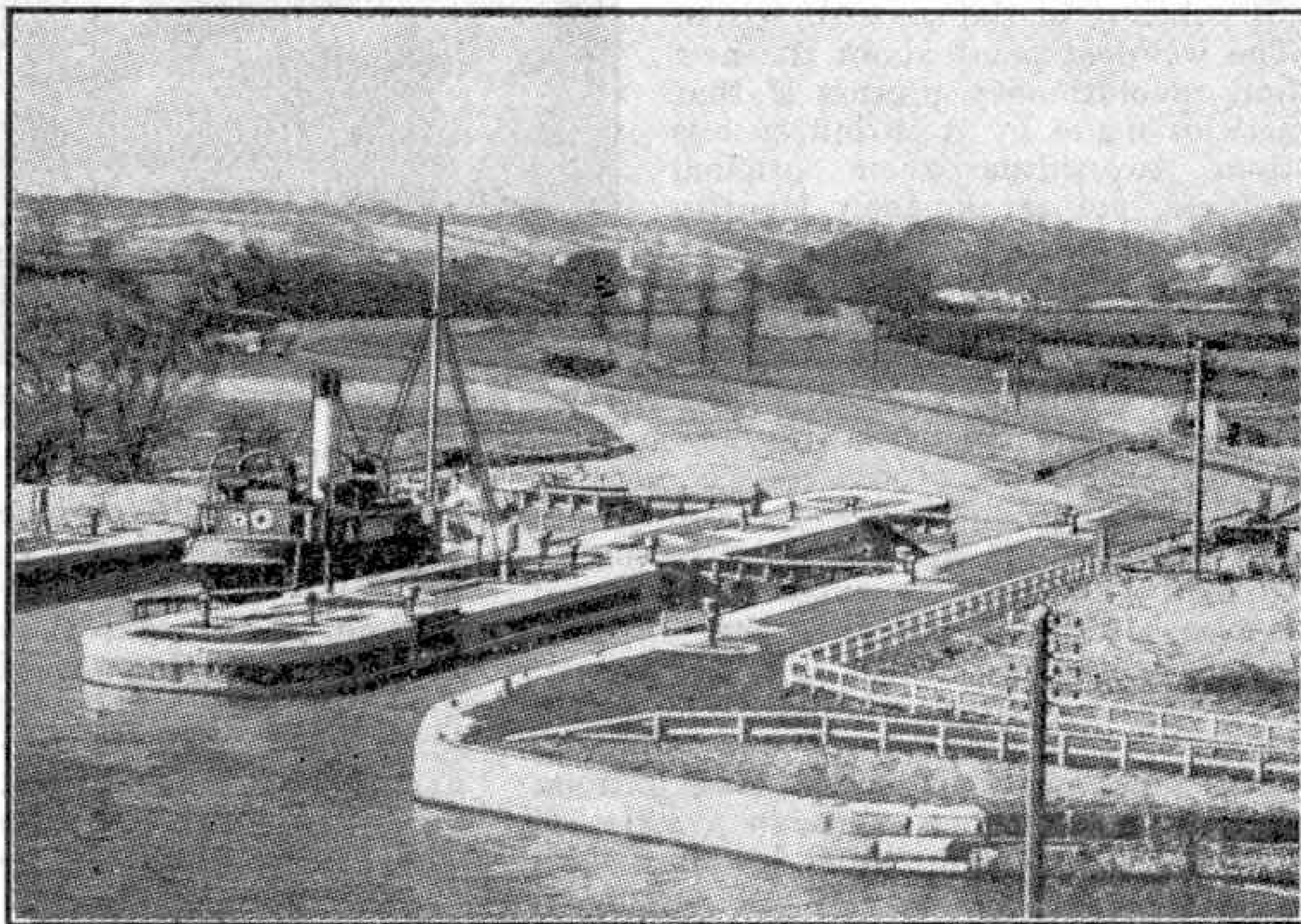
The Anderton Boat Lift

OUR cover this month shows the canal boat lift at Anderton, Cheshire, the only structure of its kind in Great Britain. The Weaver Navigation system connects Winsford with the Mersey, 20 miles away, and is the navigable length of the River Weaver. Along it there are four sets of locks, and it approaches the Trent and Mersey canal at Anderton. The canal is 50 ft. higher, and the lift has been built to connect the two waterways, so that barges can pass freely between them.

The lift was hydraulic in operation when it was completed in 1875, but is now electric. It is connected to the canal by an aqueduct, 162 ft. 6 in. long, divided into two channels each 17 ft. 2 in. in width. These form approaches to the two 75 ft. tanks of the lift itself, the shafts of which are side by side.

When the lift was hydraulic the tanks were supported on rams 3 ft. in diameter working in the cylinders of hydraulic presses, and one tank was at the foot of the lift when the other was at the top. A barge to be transferred from the canal to the river was floated into the tank at its own level, and watertight gates at the open end

Saltersford Locks, on The Weaver Navigation system. For this picture, and the one on which our cover is based, we are indebted to the Docks and Inland Waterways Executive.



of the tank were then closed. In the meantime a similar operation was carried out at the lower tank, if a barge was there waiting to be lifted from the river to the canal. A small quantity of water was drawn from the lower tank, making the upper one the heavier of the two, and valves connecting the presses were then

opened, so that water could flow from one to the other. The heavier tank then moved downward and the lighter one was raised. The watertight doors were opened when the tanks finally came to rest, so that the barges could proceed on their way.

Although each tank when full weighed 252 tons, only a small difference in weight was necessary to bring about the change of level. Actually it provided about five-sixths of the power required; the rest was provided by a smaller ram used to assist in working the lifts.

In this form the Anderton boat lift did splendid work for many years, but early in the present century extensive alterations and renewals became necessary, and it was decided to make it electrical in operation. Now each tank is suspended by wire ropes passing round overhead pulleys, and counterweights consisting of 252 tons of cast iron hang from the free ends of the ropes. Because of this, little

power is required to raise a tank, although the total weight moved, including the pulley wheels, is about 570 tons. An electric motor of 30 h.p. actually does the work.

The change to electric working reduced the cost of operations and speeded up the transfer of barges from one waterway to the other.

Glass that Defies Heat

By M. Lorant

AN entirely new method of glass manufacture, yielding products that can be brought to cherry red heat and then plunged into ice water without breaking, has been developed in the research laboratories of Corning Glass Works, Corning, U.S.A., where the great mirror for the world-famous 200-in. Palomar telescope was cast. The discovery itself, and the successful completion of preliminary research surrounding it, rank with the most remarkable glass composition developments of all time.

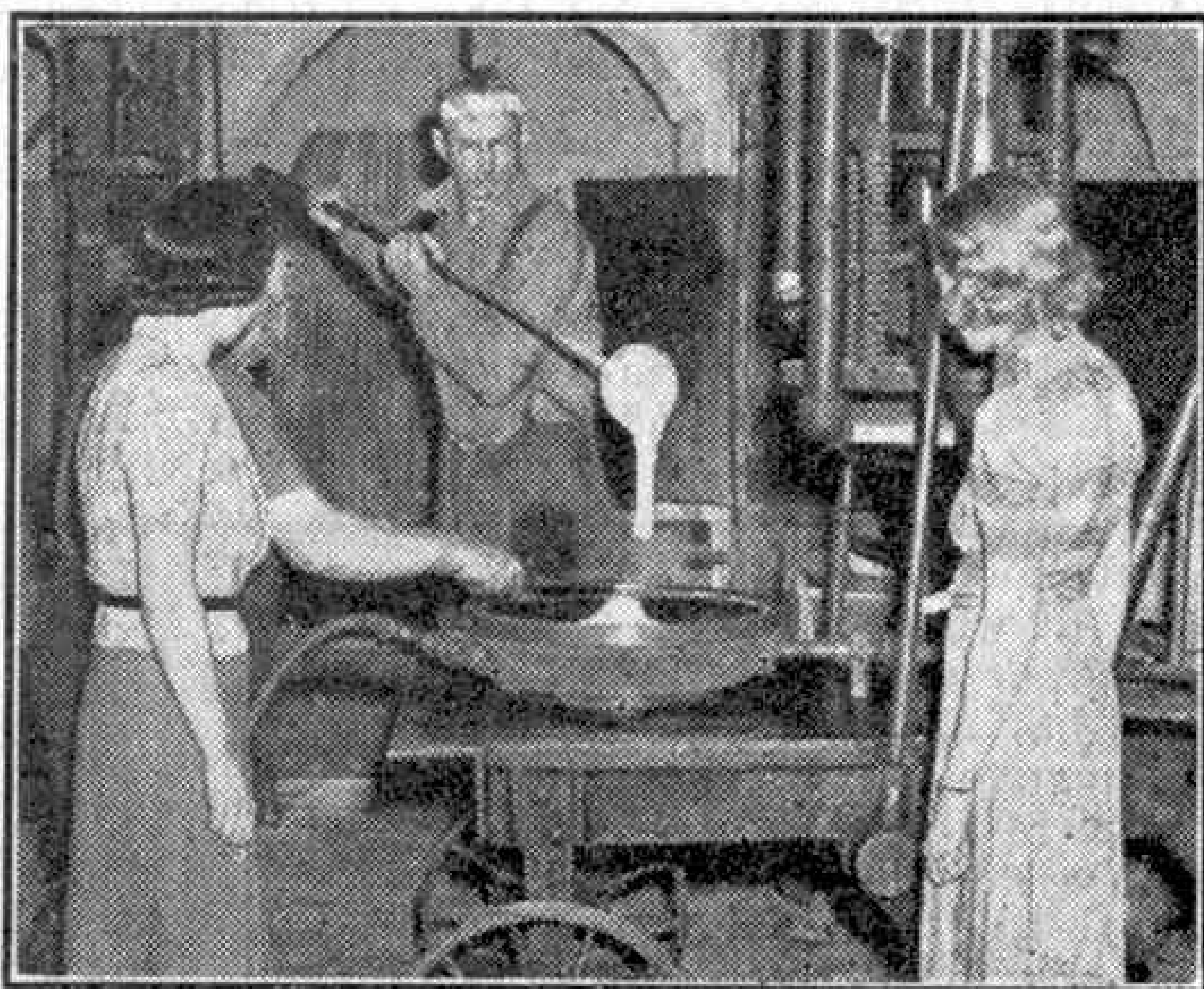
The achievement of this ultra-low-expansion glass is one of those amazing dramas of industrial research in which advance signalings of the undiscovered facts appear fragmentarily like will-o'-the-wisps to various investigators, in this case over a period of 16 years. Finally it was found that these fragmentary indications were all pointing in the same direction. The weirdest point about the new and revolutionary process is that articles made by it shrink to less than two-thirds their original volume, yet retain their identity and suffer no distortion of form. This means a shrinkage in any one direction of about 13 per cent. For instance, if you want to end up with a dish 9 in. across, you first make one 10½ in. in diameter.

The new Corning process consists of a series of contrasting operations, and there are several alternative variations at the end which give an amazing variety of results. In simplest terms, what happens in the main process is this. A normal glass object such as a plate or beaker is made by the usual melting and moulding operations, but with a special glass formula to start with. Then, through a series of treatments, involving final leaching with dilute nitric acid, part of the structure of the glass is removed, leaving behind a skeleton, so to speak. Under further heat treatment the glass shrinks down to a volume that is 35 per cent. smaller than its original size.

As a matter of fact, during the acid treatment 36 per cent. of the body of the glass has been removed. The surface feels rough to the touch, but does not seem porous, although the glass at this

stage has in it sub-microscopic capillaries or air spaces. On final heat treatment the glass body shrinks to a transparent, homogeneous state. In this completed state the glass can be heated to a bright cherry red colour, and then dipped into a vat of ice water with no injury whatsoever.

The outstanding significance of the new low-expansion glass is that it will offer in an economical price range a material similar to fused quartz, as it contains about 95 per cent. of silica, the oxide of the



Molten glass brought from the furnace to the hand press mould. A glass worker uses special shears to cut off the exact amount required, judging the moment to do this by long experience.

element silicon, of which quartz is a crystalline form. It was just over a hundred years ago, in 1839, when A. Gaudin, in France, showed that molten quartz could be worked like glass. A quartz crystal can be melted at the high temperature of the oxy-hydrogen flame, and in that manner can be formed into various vessels chiefly for laboratory use. The resulting silica glass stands sudden changes from hot to cold without appreciable injury.

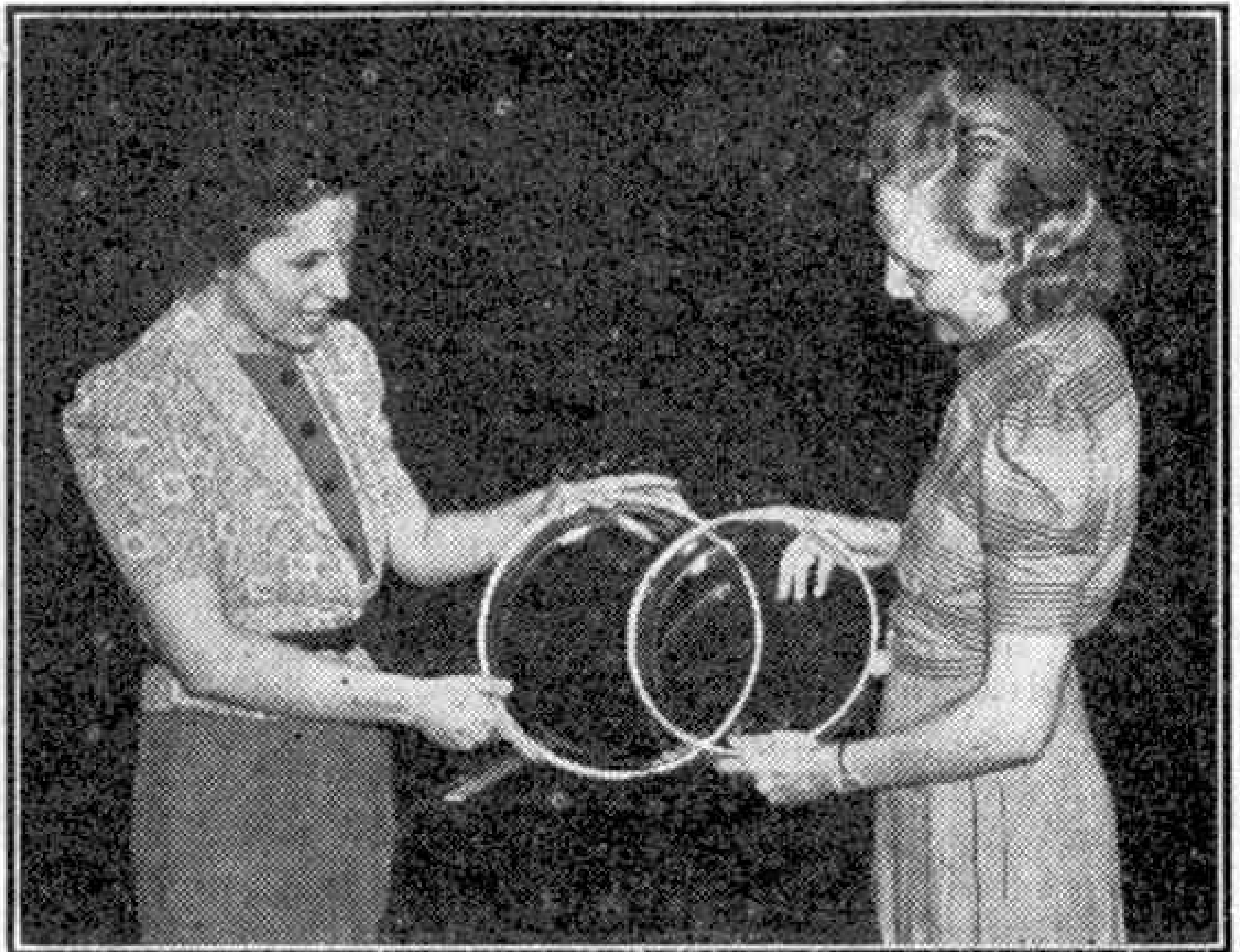
Fused quartz, or, better, silica glass, has not been found adaptable to mass production methods of fabrication, and hence its application outside of special fields has been curtailed. The new glass product is equal to fused quartz silica ware for practical purposes, and the indications are that it can be manufactured by mass production methods and at resultant low

cost. The process has been definitely achieved from a research standpoint, but it is still subject to continuous experimentation with a view to standardization and improvement.

To understand the significance of this development one must recall that in olden days glass expanded so much when heated, and contracted so much when chilled, that it would invariably break when subjected to extremes of temperature. Fused quartz is practically shock-proof thermally, but is not a mass production commodity. The chief difficulties in fusing it are its high melting point, lack of suitable refractories in which to melt it, and the fact that the melting and vaporization points are close together. In price range it is relatively high.

Back in 1915, Dr. E. C. Sullivan, Research Director, and Mr. W. C. Taylor, Chief Chemist, of Corning Glass Works, invented a range of glasses known technically under the classification of borosilicate glasses. These glasses, which have received wide public acceptance under the Pyrex trade-mark, are highly resistant to thermal shock.

Until that time all laboratory glass in use in the United States had been imported from Europe, particularly from Jena. The

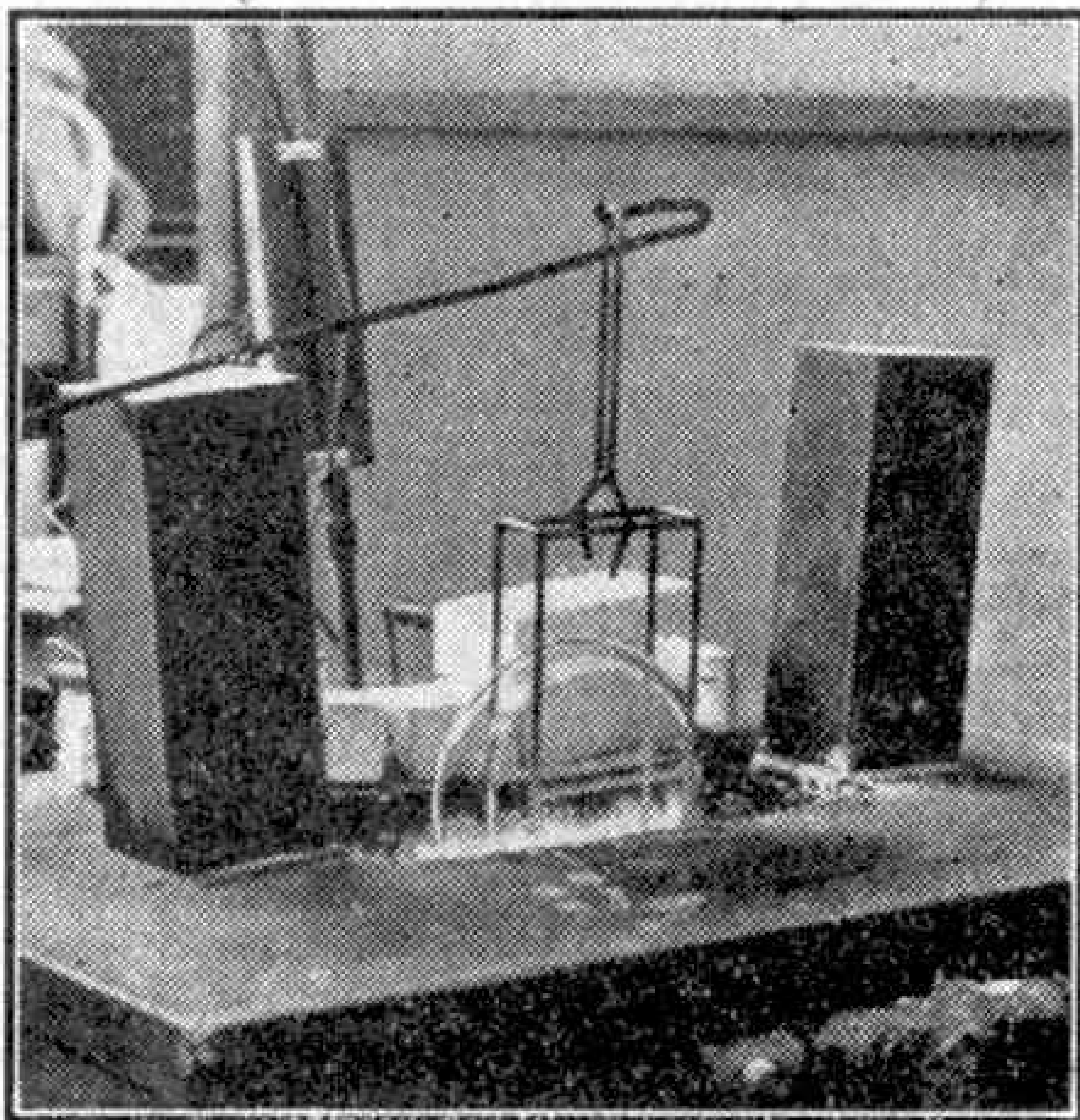


Low expansion glass shrinks during the manufacturing process. Ware 12 in. in diameter after the preliminary operations is only 10½ in. across when the new process is complete.

imported vessels were thin-walled and broke easily under the pressure of a stirring rod. The Sullivan and Taylor glasses, in addition to offering thermal shock resistance, could be made with thicker walls than the German ware and hence were more durable.

The next milestone in heat-resistant glassware was announced by Corning in January of 1936. It marked the achievement of cooking utensils that would not only withstand oven heat, but also could be heated directly over the open gas flame or an electric heater coil. As a man in the street puts it, eggs could now be fried in glass, and you could look at their undersides while cooking! The present milestone marks the third big advance in progress toward overcoming completely one of the greatest limitations of glass, namely its tendency to break when suddenly heated and chilled.

In the new Corning glass-making method the starting object, say a dish, flask, beaker, or tube, is produced from certain original types of borosilicate glasses that are somewhat unstable. By means of heat treatment these glasses are separated into two phases, one being rich in silica and highly stable, the other containing substantially no silica and being very soluble in the common acids. The second phase is then extracted by leaching in an acid bath for some period of time, which leaves a skeleton-like structure of high silica glass. This is then fired to condense the structure, which is porous, into a clear, solid mass. It is during this final heating that the ur anny shrinkage occurs



Ware made of the new glass does not break when heated to a temperature of 950 deg. C. and immediately plunged into ice water.

Night-Flying by Day

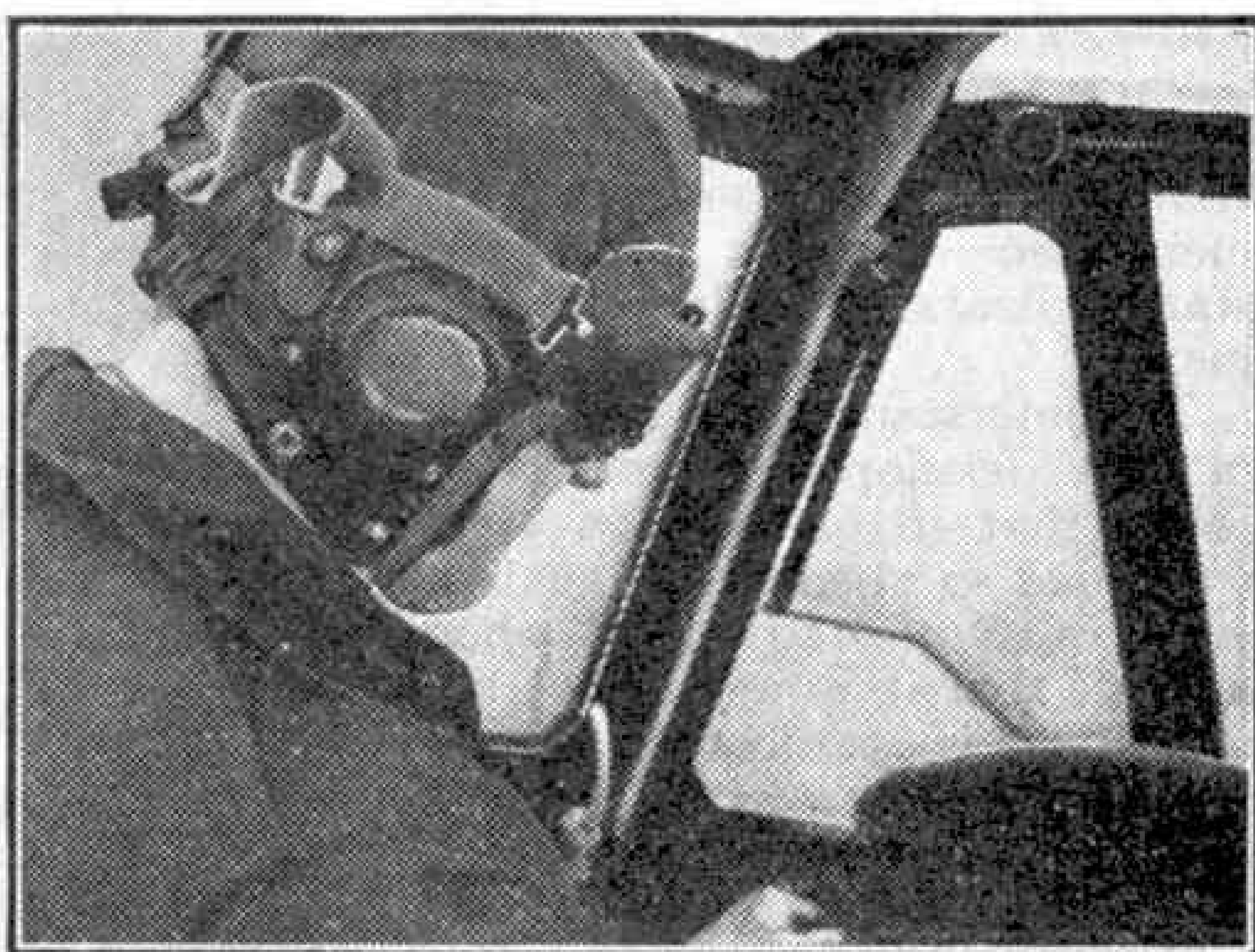
By John W. R. Taylor

MANKIND has sweated and toiled for countless centuries to find a way of turning night into day, and has achieved a high measure of success with such devices as mercury-vapour and sodium lights. It was inevitable that some bright person would one day want to go to the other extreme and seek a way of turning day into night.

As a matter of fact, the idea is not as silly as it sounds, for the Royal Air Force often has a very good reason for wanting to convert day into night.

It is little use having the world's best bombers and fighters—or civil air liners—if they can be operated only in daylight. It robs the bombers of their best protection—the night sky—and the air liners of 50 per cent. of their earning capacity. Consequently pilots must be taught night-flying, and that is where the trouble starts.

The ground looks very different at night, especially to a pupil pilot, and things were even worse during the war when blackout



A pilot receiving night-flying instruction in daylight. The combination of his blue-glass goggles and the amber panels fitted over the windscreen produces the required blackout. Illustrations to this article are by courtesy of the Editor of "Hunting Aviation Review."

awful lot of bent undercarriages and broken wing-tips to be swept up at dawn.

What was wanted, in fact, was something to turn day into night, so that pupils could do their night-flying by day.

A method in use before the war had consisted of sitting the unfortunate pupil under a domed canvas hood in the open cockpit of a two-seat trainer, so that he could fly in daylight and yet see nothing outside the cockpit, which was lit by a frail glimmer of electric light. The psychological effect of flying along "blind" even at a modest 100 m.p.h., in a small "box" with only a few instruments for company, can be imagined. It made night-flying the most dreaded part of a pilot's training.

But it was the best that could be done, until one day an R.A.F. officer who happened to be a photographer and knew a thing or two about colour filters had a bright idea . . .

Experiments had already been made using dark glasses fitted over pilot's goggles, in an effort to simulate darkness. But this made the cockpit dark as well as the sky and the pilot could not see even his instruments. On the other hand, as any photographer knows, by fitting a coloured filter in front of a lens the passage of certain definite colours can be restricted while the others are let through quite normally.

The reason for this is that daylight is made up of all the colours of the spectrum—as we can see when it shines through

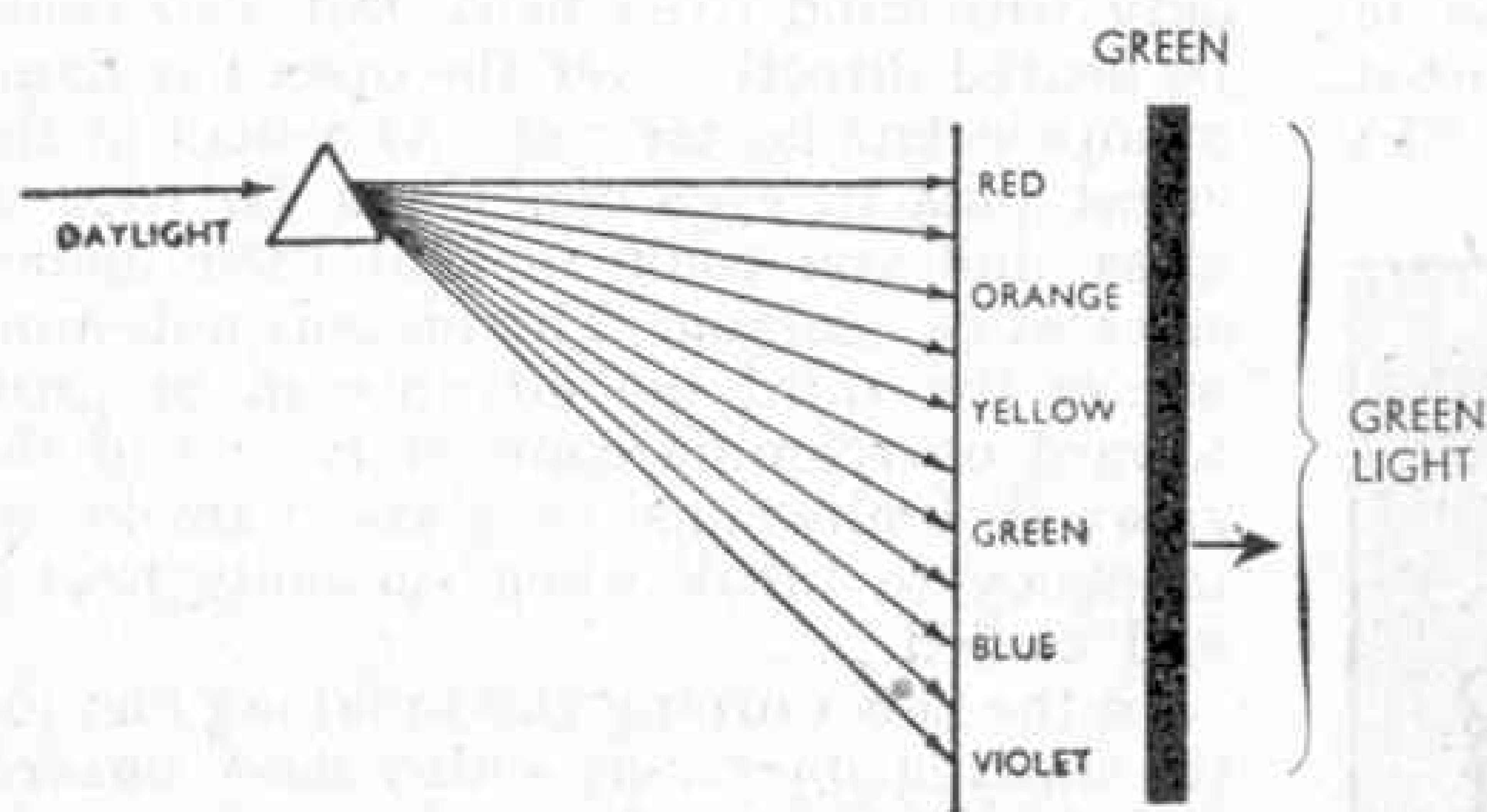


Fig. 1. When white light is passed through green glass, only green rays are transmitted; the remaining colours of the spectrum are cut out.

removed all the twinkling lights that had been a solace and help to peace-time pilots. Valiantly R.A.F. flying instructors tried to persuade their fledglings that external aids are not nearly so useful to a night-flying pilot as his cockpit instruments. The pupils discovered all too often that, during their first night flight, with a wide expanse of nothingness below them, all the instruments seemed to look alike, and not at all helpful. And there were an

raindrop "prisms" and is broken up to form a rainbow. If we look through a green glass, however, everything appears green, because the glass takes out some of the colours of the rainbow and lets green predominate (see Fig. 1). The same

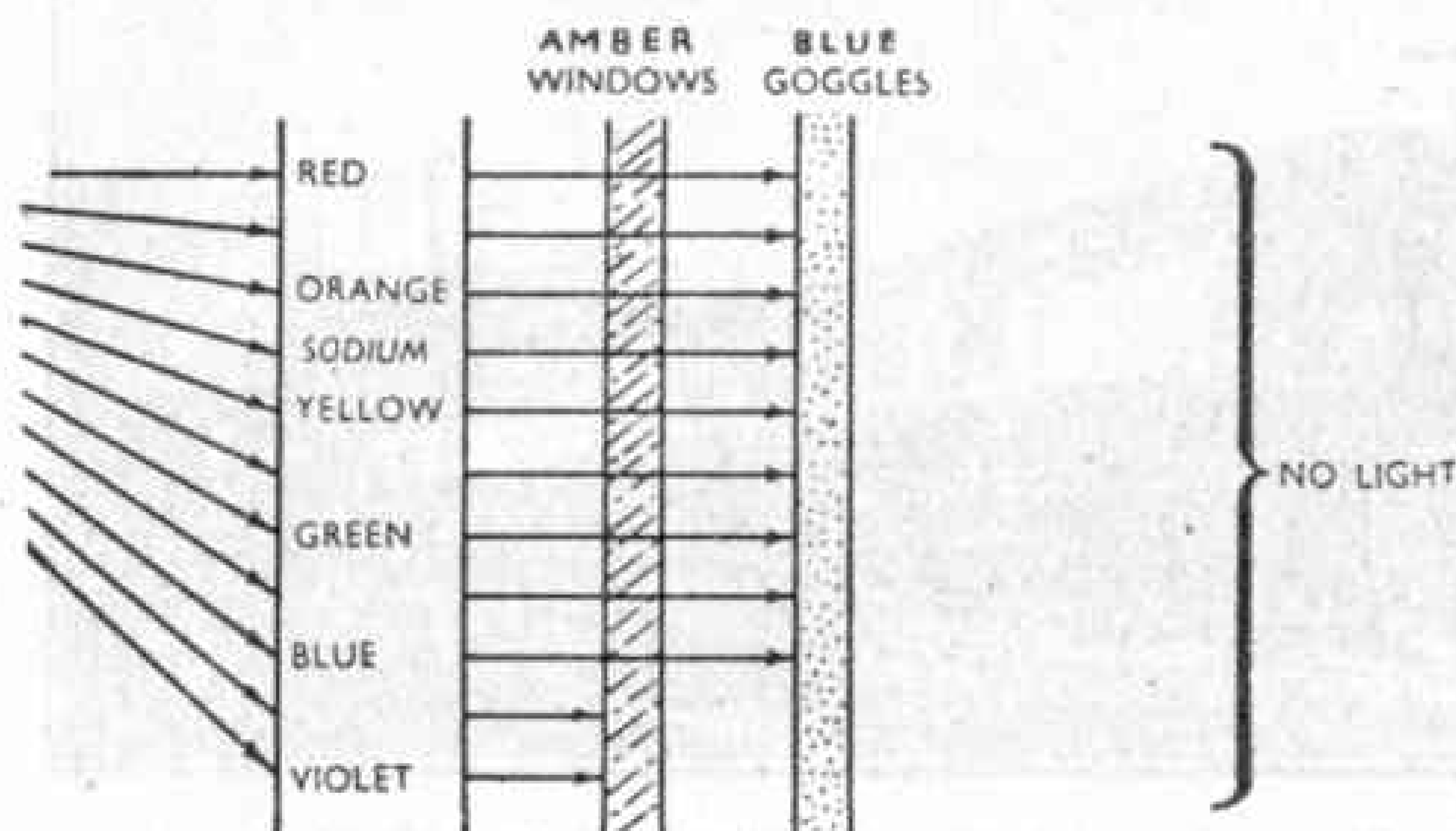


Fig. 2. The combination of an amber window with blue goggles cuts out all light.

thing happens with other colours.

So, by careful choice of coloured filters it is possible to cut out certain colours and, in fact, by making light pass through two or three different filters it is possible to reach the stage where only one colour is left. Consequently, argued the R.A.F. man, it should be possible to find a combination of filters that would restrict all colours and so achieve complete darkness in daylight, which was what Training Command wanted.

Unfortunately, it was not as easy as it sounded, and months of careful experiment followed. At last, however, the theory was proved correct, when a combination of amber and blue filters was found to produce a perfect blackout (see Fig. 2).

The scheme was tried out on a Service

training aircraft, using amber panels fixed over its windscreen and blue glasses in the pilot's goggles. It worked perfectly; nothing was visible outside the cockpit, but, as the instruments were inside, the pilot's vision of them was only slightly impaired by the blueness of his goggles. Naturally, the amber panels were fixed so that they could be moved aside when not required, for night-flying forms only a small part of the training curriculum.

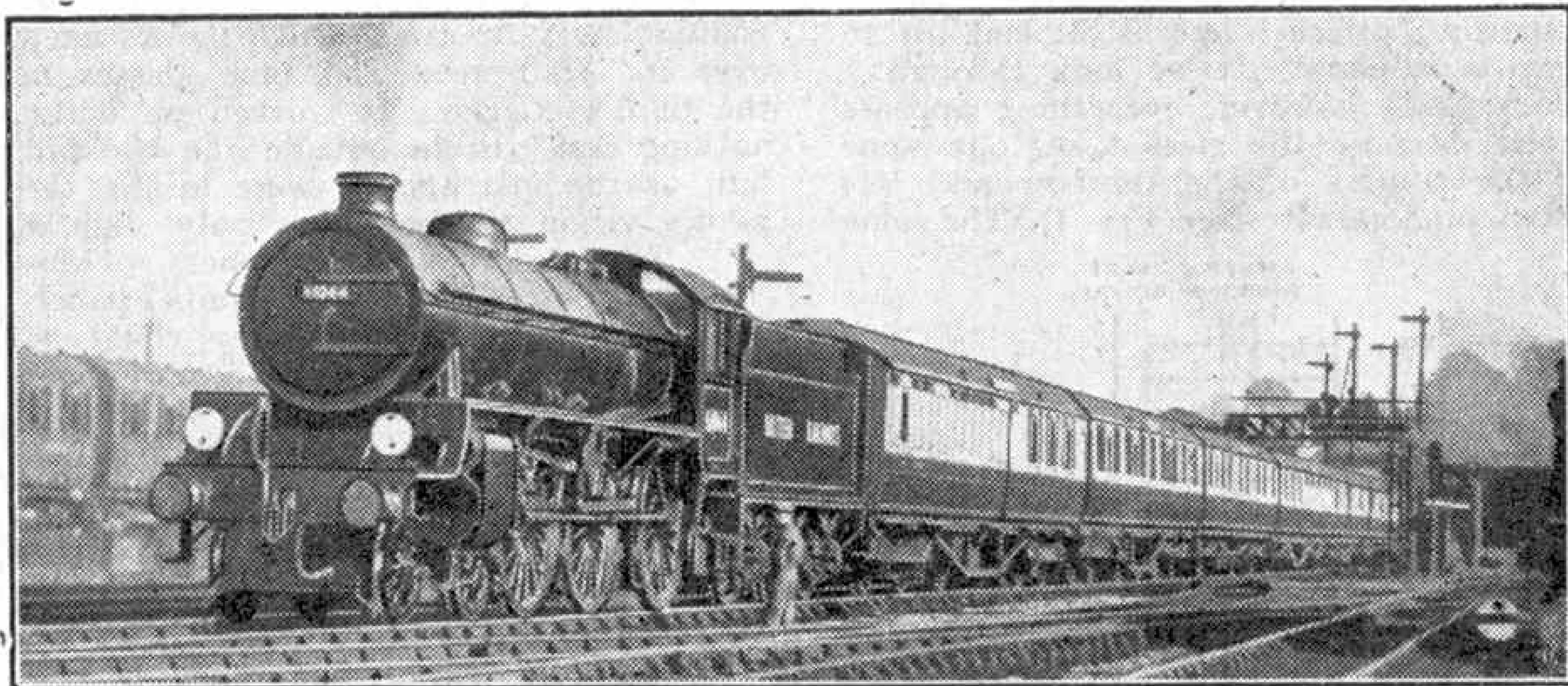
It was soon decided to adopt the scheme as standard for R.A.F. basic night-flying instruction; it was given the official name of "two-stage amber" and its fitting became a standard requirement for all new basic trainer aircraft.

First new aircraft to be equipped with two-stage amber was the Percival "Prentice" 3-seat trainer, illustrated below. In this case, the amber panels are designed to cover the four flat panels of the windscreen and the forward half of the side panels in the sliding hood. This achieves the necessary standard of blackout in front and to both sides of the aircraft, while letting in enough light over the pupil's shoulder to enable him to see his instruments clearly. When necessary, the amber panels over the windscreen can be moved aside with one hand in a few seconds.

Similarly, the R.A.F.'s two new trainers—the Avro "Athena" and Boulton Paul "Balliol"—are both fitted with two-stage amber equipment. So, night flying has lost its terrors, for by simply raising his goggles a nervous pupil can now at any time turn night back into day.



The Percival "Prentice," a 3-seat machine designed as an elementary trainer for the Royal Air Force.



British Railways 4-6-0 No. 61044 leaving Ipswich with Norwich and Cromer portions of the 12.30 p.m. from Liverpool Street. The train is finished in an experimental livery. Photograph by G. R. Mortimer, Manningtree.

Railway Notes

By R. A. H. Weight

British Railways New Liveries

The Railway Executive have now decided the future liveries of British Railways locomotives and passenger rolling stock. Blue, with black and white lining, is reserved for heavy-duty express passenger engines, while certain classes of passenger engines will be dark green, with black and orange lining. Other passenger and mixed traffic locomotives will be black, with red, cream and grey lining; freight engines will be unlined black.

Main line corridor stock will be crimson lake with cream upper panels, but local steam stock and passenger type vans will be crimson lake only. Multiple-unit electric stock will be green.

The decision follows the experiments begun last year with various tentative schemes. The new liveries are to be adopted gradually as circumstances permit, so that the previous standard, and temporary or experimental finishes as referred to elsewhere in these "Notes," will probably continue to be seen for some time.

National and Scottish News

As part of an extensive programme for standardizing the locomotives and rolling stock of British Railways in order to secure, gradually, more economical production and maintenance, various designs are being drafted of vehicles suitable for mass production. A standard all-steel railway carriage type is being evolved, while designs are well advanced for the first two standard types of British locomotive. Work is also in hand on a diesel shunting engine, and the most suitable constructional features and materials for standard classes of open and closed goods wagons are being studied as part of a long-term plan.

It may be possible eventually to reduce the number of different locomotive types ordinarily in use to about 12, instead of the 400 now existing among the 19,726 engines that represent many years' practice, as developed by the Chief Mechanical Engineers or Locomotive Superintendents of numerous independent companies. This would not mean, however, that new ideas or improvements would not be considered as they arise, or that long-existing standards would necessarily be swept away if they had proved of value.

The Motive Power (Locomotive Operating) Departments of each Region have been raised in status, and

their Executives report direct to the Chief Regional Officer or the functional members of Railway Executive concerned. In the Scottish Region, for commercial, engineering and other administration, each appropriate Superintendent will control lines and rolling stock of the former L.M.S. and L.N.E. systems, there having been a general merger north of the Border.

The former Cheshire Lines Committee tracks and traffic working have now come under control of the London Midland Region. Formerly, locomotives for that separately-managed, jointly-owned group of lines had been provided by the L.N.E.R.

We learn that the Midland type 4-4-0 Compound engines have been doing good work on the difficult Dumfries-Stranraer route.

The B.S.A. Truck Mover

B.S.A. Cycles Ltd., Birmingham, have marketed an ingenious mobile Truck Mover for use in railway goods yards or sheds. As may be seen from our illustration, it can be handled by one man, being self-propelled by an air-cooled petrol engine, which also operates the powerful hydraulic ram that locks the truck mover securely between the rail and the underbody of the wagon. The appliance can then move the wagons, up to 10 at once if necessary. A three-speed gear-box permits operation over gradients of varying severity.

The truck mover is fitted with solid rubber tyres on its two steel wheels. It can travel over rough ground as well as on rails including traversal of points and crossings. It may be used to turn wagons on a turntable, also to move them in a siding or depot. Thus it is available at any time when there might be no locomotive, horse or other motive power available, and so fulfils many wants.

Eastern and North Eastern Regions

Those familiar with Doncaster station and its surrounding maze of lines, with their almost innumerable semaphore signals worked from many boxes, will be observing enormous changes this spring. Indeed it is possible that by the time these notes appear in print the whole traffic working, including junctions to the north and south, will be controlled by colour-light signals, with points power-operated from one or other of the new electrically equipped signal boxes. These are replacing six mechanical boxes of the old type.

The panels in the new cabins show track layout in diagram form. Routes are set up and points moved in groups by means of an entirely new system of sequence switch interlocking, greatly reducing the number of lever movements necessary as well as

abolishing the fatigue due to pulling hundreds of levers manually every hour as hitherto required.

"B1" 4-6-0 engines are working through regularly from Cleethorpes to Birmingham and back, in charge of L.M.R. crews west of Nottingham. The route is via Lincoln (Midland), the Newark level crossing of the East Coast main line, Nottingham and Leicester. Rebuilt G.E. 4-6-0s run from the former M. & G.N. Joint line stations to Leicester, L.M.R.; they have also been noted at Nottingham on excursion work. Ten "B1s" are building at Gorton, numbered 61340-9. New "A1" 4-6-2s are stationed at York, whence they work through to King's Cross.

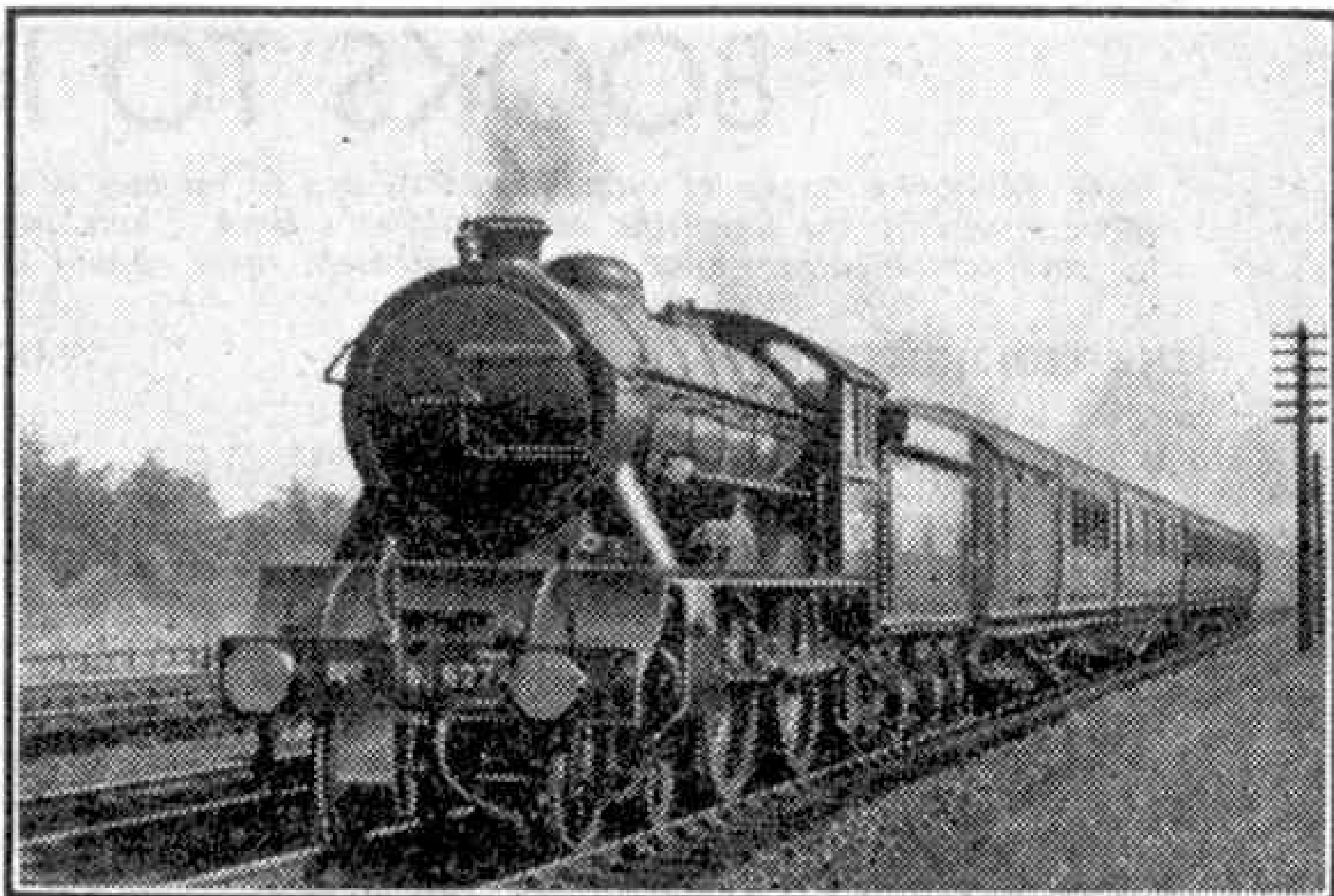
A recent innovation is the allocation of several "L1" 2-6-4Ts as new engines to Grantham shed. "A3" class 4-6-2s "*Tranquil*" and "*Harvester*" have left Works again, painted experimental blue with red lines. "*Gladiator*" and "*Galopin*," of the same class, are the first "Pacifics" stationed at Darlington. Class "F7," small 2-4-2T, is now extinct.

At least two G.N. Section London suburban set trains are painted a rather bright red. The green "B2" 4-6-0 No. 61671 "*Royal Sovereign*" hauled the Royal Train in January last and is often seen on Cambridge-King's Cross buffet car expresses.

London Midland Regional News

A Euston-Manchester express has been recently formed of coaches painted cream and carmine; the latter hue is described as "something between Post Office and Midland red" so provides a pleasing effect. Engine No. 45503 is now named "*The Royal Leicestershire Regiment*"; No. 45536 "*Private W. Wood, V.C.*" is rebuilt to "6P" and is running with a "Jubilee" type tender. Self-contained steam railcar No. 29988, just withdrawn, was the last of its kind to remain in service. It was built in 1906 and belonged to a type once popular and in considerable use in Britain.

With a view to clearing drifts of snow before they become serious, on bleak or mountainous stretches of line such as Settle-Carlisle, 76 engines of the 4-6-0, 2-8-0, and 2-6-0 types are fitted with



A York-Leeds train headed by No. 62743 "*The Cleveland*" of the D49 "*Hunt*" class. Photograph by C. Ord, York.

new-style snow ploughs, carried entirely beneath the buffers, which can remain in position all winter without interfering with ordinary running duties. For coping with worse conditions, new all-welded larger ploughs have been devised for attachment in front of "4F" 0-6-0s.

Western and Southern Tidings

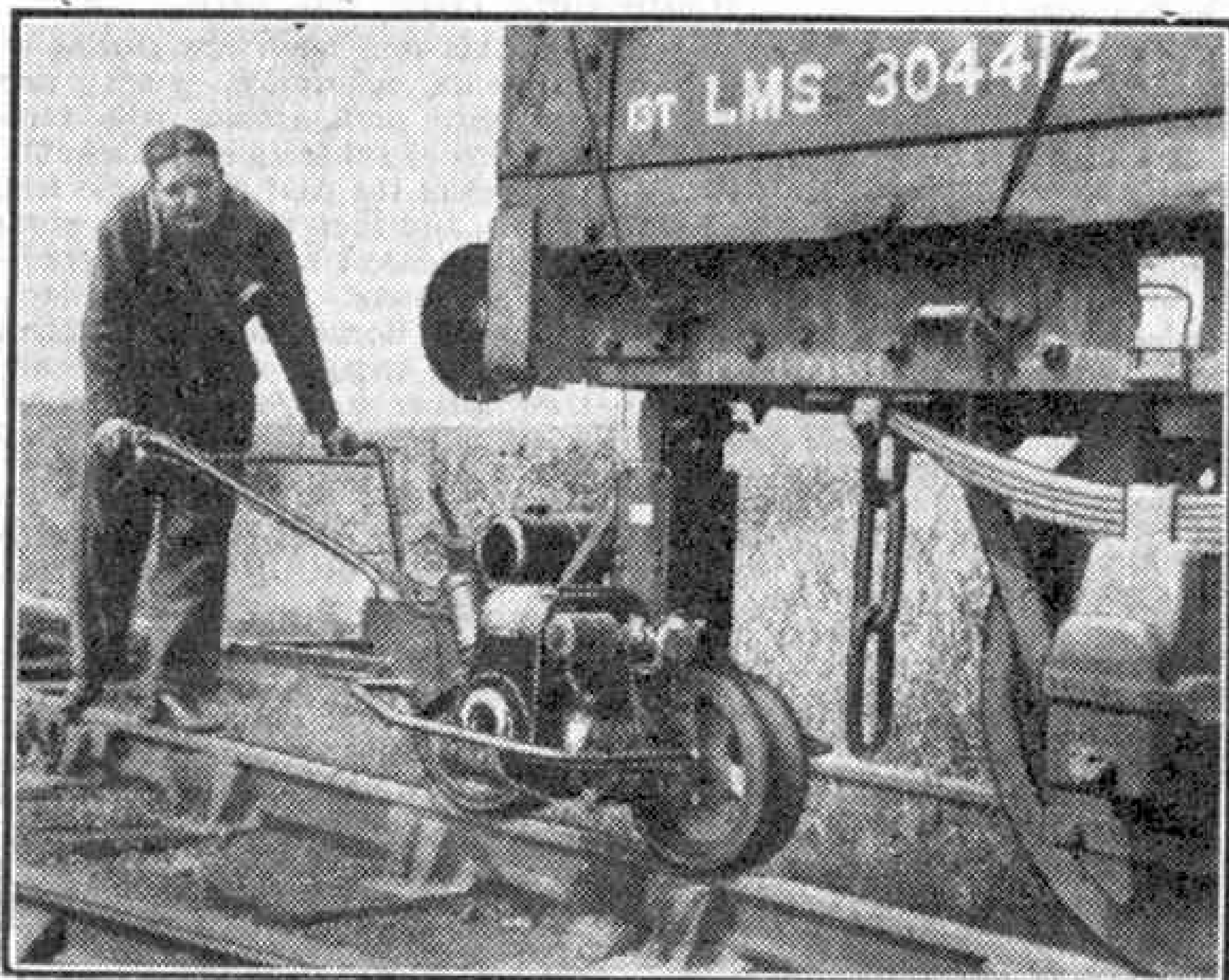
It is interesting to note that the famous "Castle" class has attained its silver jubilee, as it was introduced by the G.W.R. at Swindon in 1923 as an enlargement of the 4-cyl. "Star" class 4-6-0. The design proved an instant success, and "Castles" have distinguished themselves over the difficult grades of Devon and Cornwall, as well as in exceptionally fast running between Swindon and Paddington. There are 151 of them, 145 built as "Castles," the remainder brought into the class on rebuilding. The most recently completed example is No. 7017, "*G. J. Churchward*."

The only alterations as compared with the original design to be seen in the most recent batches are a shorter chimney, enlarged super-heating surface, and the addition of mechanical lubricators. "Kings" are now shedded at Bristol, Bath Road. Many mixed traffic tender and tank engines are painted black, with lining.

On the Southern Region, the batches of new 4-6-2 locomotives lately under construction were almost completed at the time of writing, the last engines being No. 35030 of the "Merchant Navy" type and No. 34090 "*Battle of Britain*" class. Several of the former have been finished in yellow-lined malachite green and provided with 6,000 gall. tenders, going to Bournemouth shed and so releasing some "Lord Nelsons." These have gone to Eastleigh depot, though still engaged on similar Bournemouth-Waterloo duties. Nos. 35022-3 respectively are named "*Holland-America Line*" and "*Holland-Afrika Line*."

"*Battle of Britains*" Nos. 34087-90 are allocated to Ramsgate, several changes having taken place in the shedding of earlier light 4-6-2s. Apparently none of the 4-cyl. Drummond "Paddlebox" 4-6-0s is working. Nos. 445, 459 and 460 recently left Eastleigh for the scrap yard.

"*Battle of Britain*" No. 34078 has been named "*222 Natal Squadron*."



The B.S.A. Truck Mover in action. This appliance is described in the accompanying notes. Photograph by courtesy of B.S.A. Cycles Ltd.

BOOKS TO READ

Here we review books of interest and of use to readers of the "M.M." With the exception of those issued by the Scientific and Children's Book Clubs, which are available only to members, and certain others that will be indicated, these should be ordered through a bookseller.

"THE CHILDREN'S BOOK OF LONDON"

By L. G. BULLOCK (Warne. 7/6)

This is the wonderful story of how London has become the greatest city in the world. It is told in simple fashion, taking us back through the 2,000 years of the city's history from the days of the ancient Britons through those of the Romans, Saxons and Danes down to the present time. With the author we travel along well-known highways and byways while he tells us about the interesting places in them, and the great men who have made them famous. There are many black and white drawings for illustrations, with sectional maps in colour, and at the back of the book there is a complete folding children's map of London. An unusually interesting and attractive book of its kind.

"WORLD OF LIVING THINGS"

By KENNETH SPARROW
(Vawser & Wiles. 7/6 net)

This little book is intended for those coming to the study of biology for the first time, but it is not by any means a text book, even an elementary one, for it is written easily and lightly, as one would expect from Mr. Sparrow, and is at once practical and pleasant to read. A large number of reproductions of photographs by Mr. Harold Bastin, whose work has often appeared in the "M.M.," help to make a very attractive book that will not only give its young readers a useful survey of living things of all kinds, but also will show them in a novel and interesting way how to go on to learn more for themselves.

"MODELLED ARCHITECTURE"

By P. R. WICKHAM
(Percival Marshall. 12/6 net)

Mr. Wickham is an experienced model-builder whose knowledge of both materials and methods is extremely wide. In this book he deals with the modelling of buildings, and has produced what is probably a complete account of the subject. He takes his readers through all the essential details of a fascinating pastime, beginning with notes on scales and advice on tools and materials, and continuing with details of windows and doors, walls and roofs. He gives useful information on the construction of period buildings, churches and cathedrals, cottages and shops, and the whole is rounded off with suggestions on complete layouts and large scale work.

The book will be invaluable to all interested in architectural modelling, and may persuade others to take up this special branch of model construction.

"CATERPILLARS OF BRITISH MOTHS"

Series I and II
(Warne. 15/- each)

This book, in two volumes, has been planned and arranged on lines similar to the previous volume on the caterpillars of British butterflies. It is compiled and arranged by W. J. Stokoe and edited by G. H. T. Stovin, who has contributed special articles based on his long experiences as a collector and breeder. All the important families of British moths are described and illustrated, with details of their eggs, chrysalids and food plants as well as the caterpillars themselves.

The illustrations are particularly valuable. There are 1,191 photo-micrographs and drawings, and of these 441 are in full colour, from water colour drawings by J. C. Dollman, R.W.S. From the text and the illustrations the reader should have no difficulty in identifying the various species and following their fascinating life stories.

"LOCOMOTIVES THROUGH THE LENS"

By P. RANSOME WALLIS
(Ian Allan Ltd. 7/6)

For many years past Dr. Ransome Wallis has been engaged in the self-imposed task of recording with his camera every locomotive type and modification of it that appears in this country. Some of the results are seen in the book under review, in which appears a selection of views from what must be a very remarkable collection. The choice of subjects has been limited, with one exception, to photographs obtained during the 25 years of railway grouping. The subjects chosen have been classified according to wheel arrangement and as several views appear on each page in many instances, the book presents some remarkable contrasts and provides opportunities for interesting comparisons. Reproduction on the whole is very good, and each view is accompanied by a remarkably informative caption.

Copies are available from leading booksellers at 7/6, also direct from the publishers, Ian Allan Ltd., 33, Knollys Road, Streatham, London S.W.16, price 7/9 post free.

"SECTIONAL MAPS OF THE BRITISH RAILWAYS"

(Ian Allan Ltd. 8/6)

Ian Allan Ltd. have had the happy idea of publishing an atlas showing the lines of British railways before they were nationalized. In it there are 39 maps covering England, Scotland and Wales, section by section. The maps are reproduced from official Railway Clearing House maps, and the routes of different companies are shown in appropriate colours.

For railway and ordinary reference the atlas will be found most useful, especially as there is an index showing where to find any station desired.

Copies of the book can be obtained from leading booksellers, price 8/6, or direct from the publishers, Ian Allan Ltd., 33, Knollys Road, Streatham, London S.W.16, price 8/9 post free.

"THE LASTING VICTORIES"

(Lutterworth Press. 12/6 net)

Gathered together in this fine book are stories of many triumphs over disease, ignorance, cruelty and prejudice, told by the men and women who took part in them. The diversity of subjects is remarkable. We begin with the glimpses of the past that those who dig up history reveal to us, and then take part in polar exploration, visit an African forest hospital and travel over seas, mountains and deserts. American Indians, Chinese and Sea Dayaks of Borneo also have their places in the book, as well as engines and motor cars, ships and aeroplanes and other creations of mankind.

These true stories are illustrated by 63 pages of photographs.

"WESTERN AND SOUTHERN REGION LOCOMOTIVE REFERENCE BOOK"

(British Locomotive Society. 3/-)

This reference book is on similar lines to that dealing with L.M.R. locomotives reviewed last month. It gives in numerical order the various classes of locomotives on the Western and Southern Regions of British Railways. The depot to which each engine belongs also is shown and space is provided alongside each column for any notes. Named engines are listed separately, and diesel railcars, electric units and service locomotives also are dealt with.

Copies of the book, price 3/- post free, can be obtained from British Locomotive Society, 84, Toronto Road, Horfield, Bristol 7.



A Midland-built "Jenny Lind" engine No. 728 at Chesterfield Station in 1867-8. The story of this photograph and of the engine shown is told on this page. British Railways Official Photographs.

A Historic Locomotive Photograph

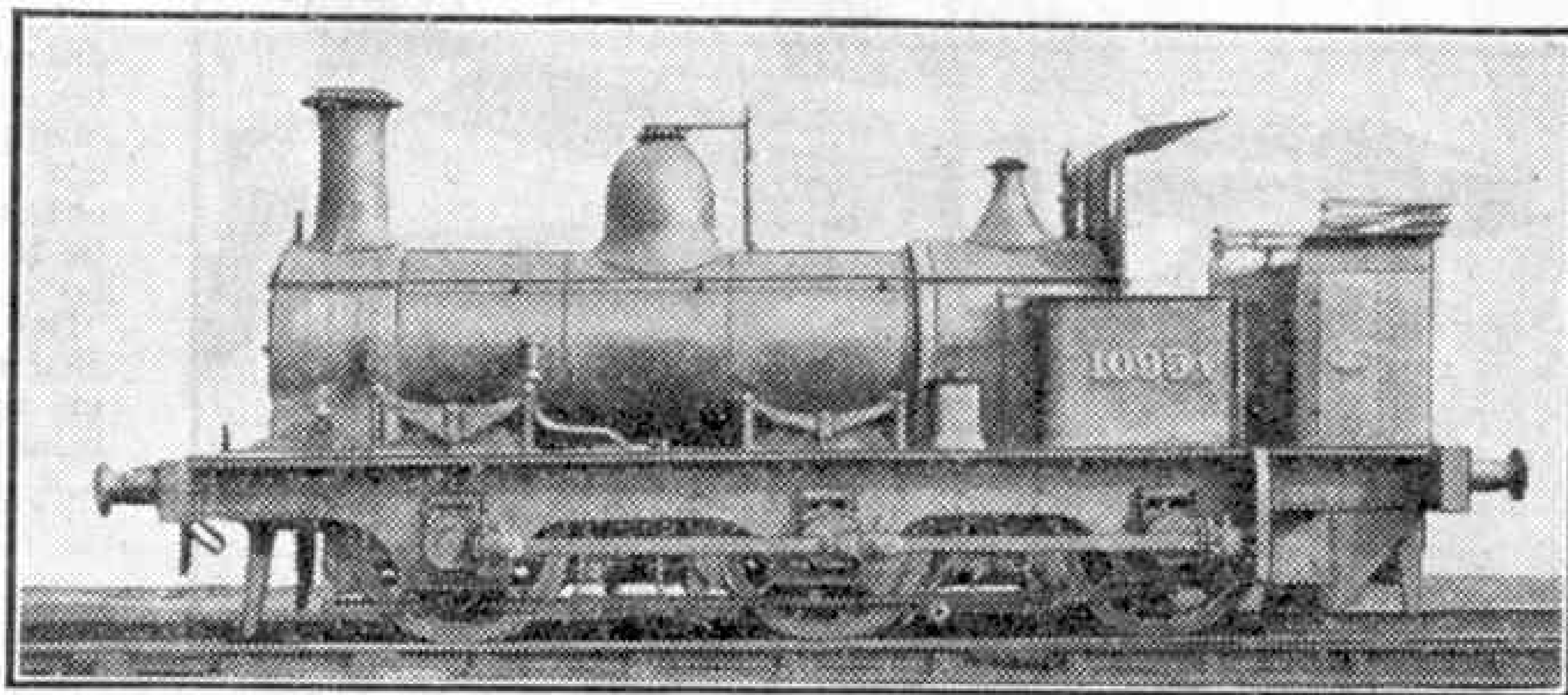
THE upper illustration on this page, showing Chesterfield Station on the former Midland Railway, came to light in the course of recent research as an old and rather faded print. After being examined and restored by the London Midland technical staff at Derby, the interest of the photograph was found to be even greater than was at first thought. For the engine shown is one of the 2-2-2 "Jenny Lind" type built by the Midland at Derby under Matthew Kirtley and provided with his type of boiler and fittings. It is considered, on excellent authority, that this is the only photograph in existence showing a Derby-built "Jenny Lind" in this condition.

The "Jenny Lind" design, which became quite a standard in use on several railways, was noted for power, economy and elegance. It originated with the Leeds firm of E. B. Wilson & Co., who were well known a century ago. Some engines of this design were built by them for the Midland between 1847 and 1849, while others were built at Derby from 1851 onward. The engine in the photograph began its career in May 1855

as Midland Railway No. 8. From 1862 onward it underwent various renumberings; and, as it only carried the number shown in the illustration, 728, between September 1867 and September 1868, this determines the period in which the original photograph was taken—80 years ago.

Later it became No. 1006, and in 1871-2 it was completely reconstructed as a double-framed 0-6-0 well tank and then largely confined to shunting duties at Burton-on-Trent. By 1884 it had become No. 1095A, and as such it appears in the lower illustration.

Finally, in the big renumbering of Midland engines that took place in 1907, it became No. 1603, and this number it carried until it was broken up in September 1920, after a total life, in its various forms, of nearly 70 years.



The shunting tank into which the "Jenny Lind" was converted. In this form it was in service until September 1920.



Air-India International "Constellation" air liner "Rajput Princess" at London Airport, being prepared for flight on the twice-weekly London-Cairo-Bombay service.

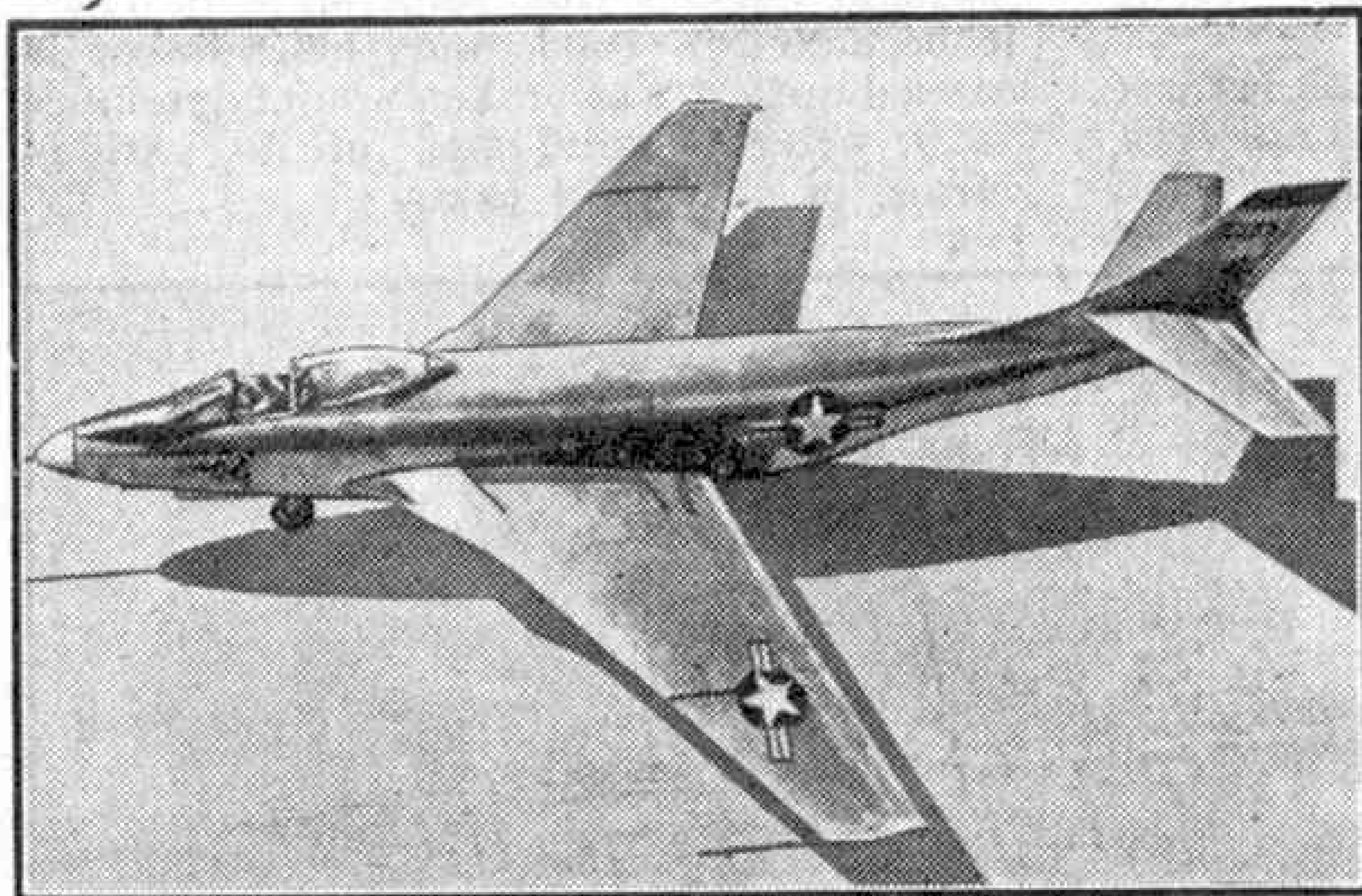
Air News

By John W. R. Taylor

More News of B.E.A. Helicopter Unit

Although the B.E.A. Helicopter Unit is no longer flying an experimental mail service, its Sikorsky and Bell aircraft are being used on other vitally important work, including the development of instruments specially designed for helicopter night flying and blind flying.

Naturally, many standard instruments used by fixed-wing aircraft, which maintain a relatively high forward speed in flight, will not function satisfactorily in a helicopter, which may sometimes need to grope its way very slowly towards a landing in thick mist, and which can hover motionless and even fly sideways or backward, if necessary. Some standard instruments, for instance, depend on the use of a gyroscope driven by the force of the wind blowing into a specially-shaped tube as the aircraft flies along. On a slow-moving helicopter this type of instrument would not operate. Good progress has already been made in this work, and it is expected that before long B.E.A.'s Helicopter Unit will be in a position to maintain an all-the-year-round scheduled service with machines equipped to fly regularly in darkness and in winter fogs.



The McDonnell XF-88 "Voodoo" jet fighter described on this page. Photograph by courtesy of McDonnell Aircraft Corporation, U.S.A.

The McDonnell "Voodoo"

The McDonnell XF-88 "Voodoo," illustrated on this page, is the first of a new class of U.S.A.F. "penetration" jet fighters, designed to operate deep into enemy territory on fighter-bomber or bomber-escort missions. Requirements for such duties are high speed, long range, heavy fire-power and ability to carry a large weight of special radio and radar sets. It is a great tribute to the "Voodoo's" designers that they have successfully included all these features in an aircraft small enough to be flown by one man. This design team have already produced such varied aircraft as the XF-85 "Goblin" parasite fighter, "Little Henry" ram-jet helicopter, "Phantom" and "Banshee" naval fighters, and the world's first twin-engined helicopter.

To permit use of a thin swept-back wing in the "Voodoo" it was decided to instal pilot, twin engines and all operational equipment in the fuselage, including the undercarriage when retracted. This has resulted in a rather large fuselage, over 54 ft. long, but the job has been done so neatly that the machine does not look big or in any way clumsy. Its twin jets are carried in the bottom of the fuselage, with intakes in the wing roots and exhausts under the tail. Radar equipment and six guns are in the fuselage nose, under the pressurized cockpit, which is fitted with an ejector-seat to catapult the pilot clear of the 'plane in an emergency. Details of the "Voodoo's" performance are still secret.

Flying Motor-Cycles

To-day's film makers are sticklers for absolute authenticity of scenery and properties they use. In *"I was a Male War Bride,"* 20th Century production co-starring Cary Grant and Ann Sheridan, some scenes of which were filmed in Germany, two German motor-cycles and sidecars were used. Then it was discovered that motor-cycles would be required for later shots at Shepperton. The producer was not content to have locally-obtainable machines; they had to be the same as those used before. So a British European Airways "Dakota" freighter was specially chartered to fly to Stuttgart, pick up the German motor-cycles and bring them to England.

"Vampire" 5 Fighters for South Africa

The South African Government have decided to buy de Havilland "Vampire" 5 ground-attack fighters for the S.A.A.F., and have placed an initial order for 10 machines.

Night Taxying Aid

Pilots making night flights from Schiphol Airport, near Amsterdam, home base of the K.L.M. fleet, are now helped by a new system of taxying aids introduced on all the main runways. As the pilot taxies out for take-off with his lights on, the runway is clearly delineated by two white lines, and at the beginning of the runway two figures denoting its direction also light up. When, after landing, he taxies to the passenger apron, there are white lines guiding him to it.

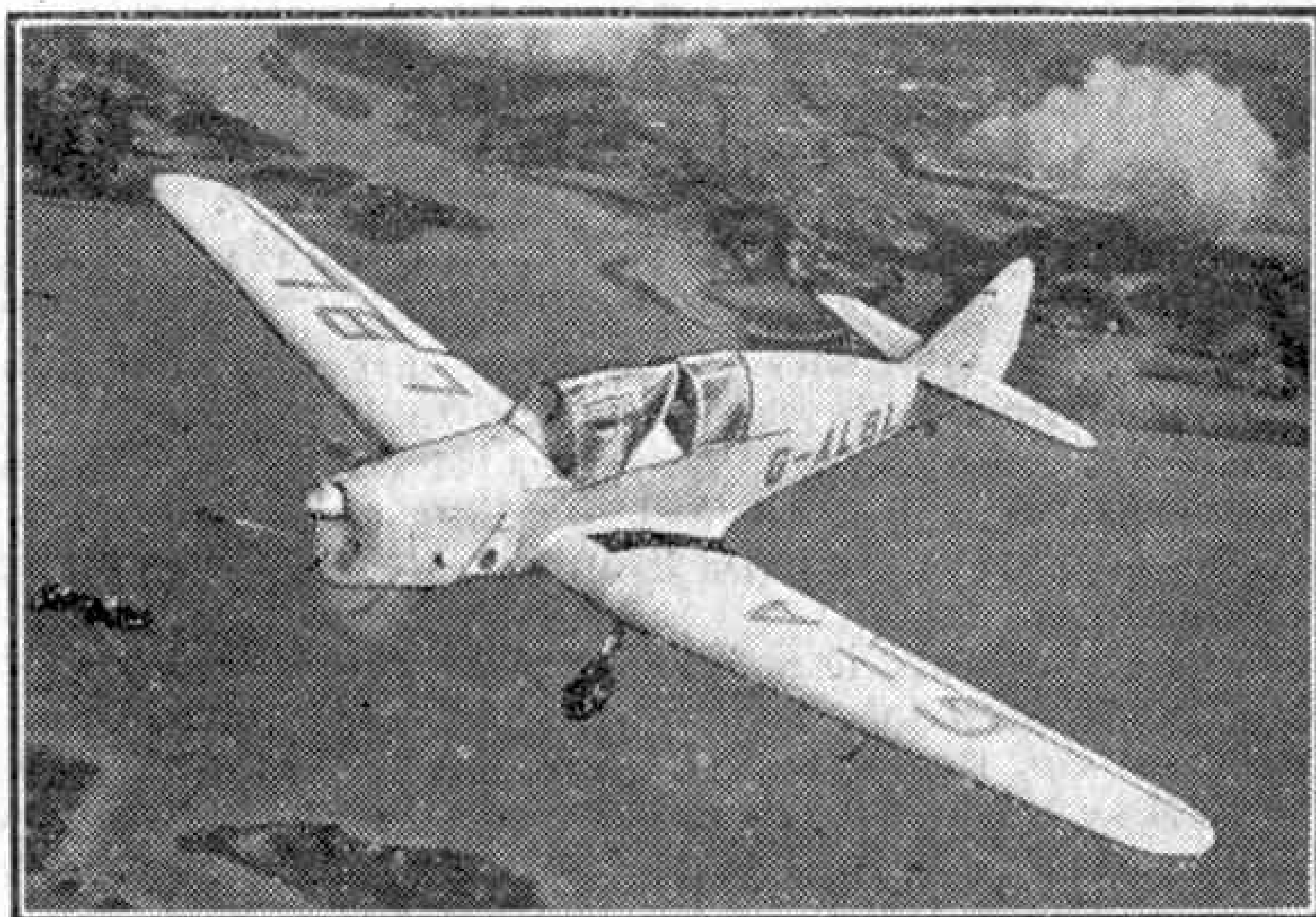
These lines and figures have been introduced at Schiphol as an experiment with a new sort of paint. It is an American patent that has been used for some years in the United States on roads, traffic signs, railways, vehicles, airfields and for advertising purposes. The paint is prepared by a special method, the secret of which is strictly protected by the manufacturers. Minute glass marbles, the size of grains of sugar, are strewn in the paint while it is still wet. These glass marbles are peculiar in that they reflect rays of light back in the direction from which they originate. Normal types of paint apply themselves to only a very small area of the glass marbles, but the paint in question, as it were, creeps on to the marbles, with the result that they are firmly held in position. A line of this paint may be expected to remain in good condition for about six years. Schiphol is the first European airport to use the new technique.

U.S. All-Weather Jet Fighter

Now that the U.S.A.F. have had an opportunity to test jet fighter squadrons under operational conditions, it has been decided to develop four distinct classes of fighter aircraft—jet and rocket-powered interceptors for short-range defence; penetration fighters for long-range escort and attack; all-weather fighters for day and night operation in all climates; and highly specialized types like the McDonnell "Goblin" parasite.

First-prize winner in a recent U.S.A.F. design competition for an all-weather fighter was the Northrop XF-89, illustrated on this page. Successor to the famous "Black Widow" night fighter, it gives the impression of being just two large engines, mounted on a wafer-like wing, with a slender upswept boom to carry its tail surfaces. Although performance figures are not available, the U.S.A.F. claim that it is sufficiently fast and formidable to track down other aircraft or search out ground installations by day or night in all kinds of weather.

Sleek lines belie its large size, for the two-seat XF-89



The first picture of the production type Fairey "Primer" training aircraft, which took only 98 days to build. Photograph by courtesy of The Fairey Aviation Co. Ltd.

is a 15-ton aircraft with a wing span of 50 ft. The pilot and radar operator are housed in a pressurized cabin, and have ejector seats for emergency use. The Northrop XF-89 has been designed with the emphasis on structural simplicity, so that production of the initial 48 machines already ordered for the U.S.A.F. should be speedy and trouble-free.

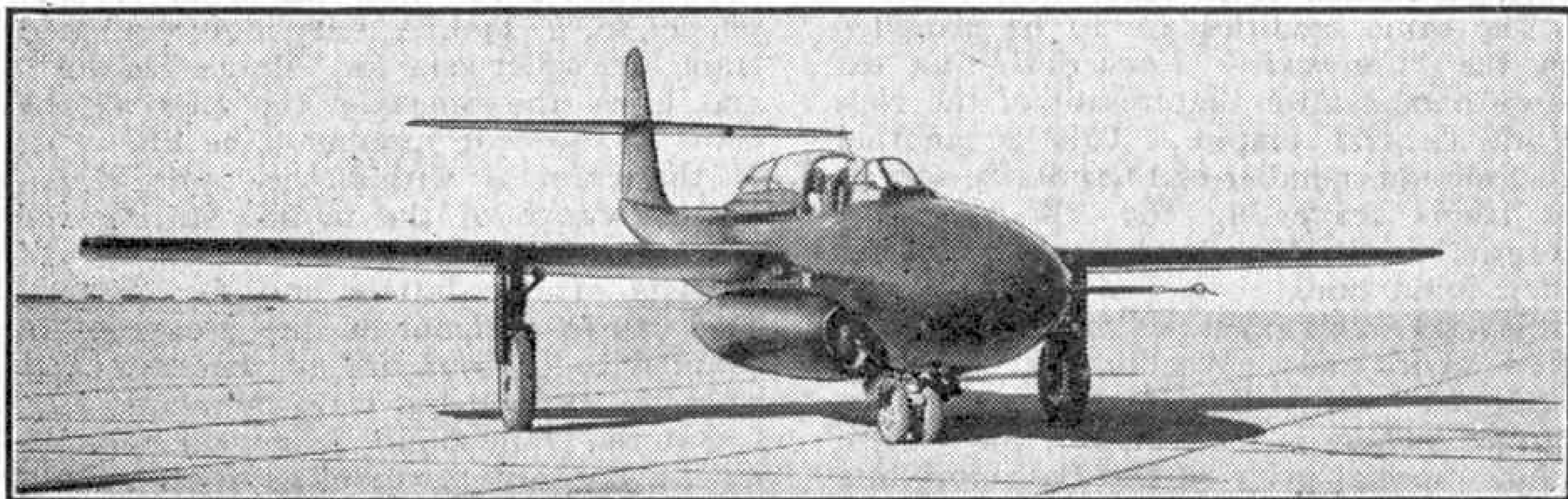
New Swissair Service

The Swissair Company are now operating a twice-weekly direct service between Zurich and Manchester, in order to extend air traffic between Britain and Switzerland, and to enable people from the Midlands and Northern England to fly quickly to Switzerland. The service is proving very attractive to businessmen in Manchester, Leeds and Liverpool who carry on important export business with Switzerland.

Prototype Costs

Lecturing to the Royal Aeronautical Society on the development of new aircraft, Mr. G. R. Edwards, Chief Designer of Vickers-Armstrongs, said that new civil aircraft to-day cost between £2 10s. 0d. and £3 a lb. of their loaded weight. Development of the prototype cost an extra £30 to £35 a lb. of gross weight, and production tooling another £10 a lb.

Expenditure of £40 to £45 for every lb. of the machine's gross weight had therefore to be faced, and a manufacturer hoping to build a new machine of "Constellation" size was confronted with an outlay of at least £4,000,000.



Northrop XF-89, the U.S. Air Force's new all-weather fighter, showing the razor-thin wing and distinctive tail assembly. Photograph by courtesy of Northrop Aircraft Inc., U.S.A.

Radio Telephones in U.S. Trains

By Francis J. Knight

AMERICAN railways are pushing ahead with a new radio-telephone "Phone while you Travel" service. For the first time, telephone calls can be made to or from a speeding train to any part of the United States and it is also possible to 'phone a friend in another train hundreds of miles away.

Pioneers in this new service were the New York Central, the Baltimore and Ohio and the Pennsylvania railroads.

The New York Central Railroad installed mobile telephone service in the observation car of the new trains introduced for the "*Twentieth Century Limited*" in September last. The "*Century*" is one of the show pieces of the New York Central, a thoroughly up-to-date all-Pullman train with a tradition of special service. It links New York overnight with Chicago, and since 1946 it has been diesel-hauled over the main portion of its 960-mile run. Between Harmon, the engine-changing point now as in steam days, and Grand Central Terminal New York, it has an electric locomotive. The mobile telephone will be available throughout the 436 miles between New York and Buffalo.

The same facilities are to be provided on the "*Commodore Vanderbilt*," an express named after the creator of the New York Central empire. This is another all-Pullman member of the notable service of trains traversing the "Water Level Route," as the New York Central describe their main line.

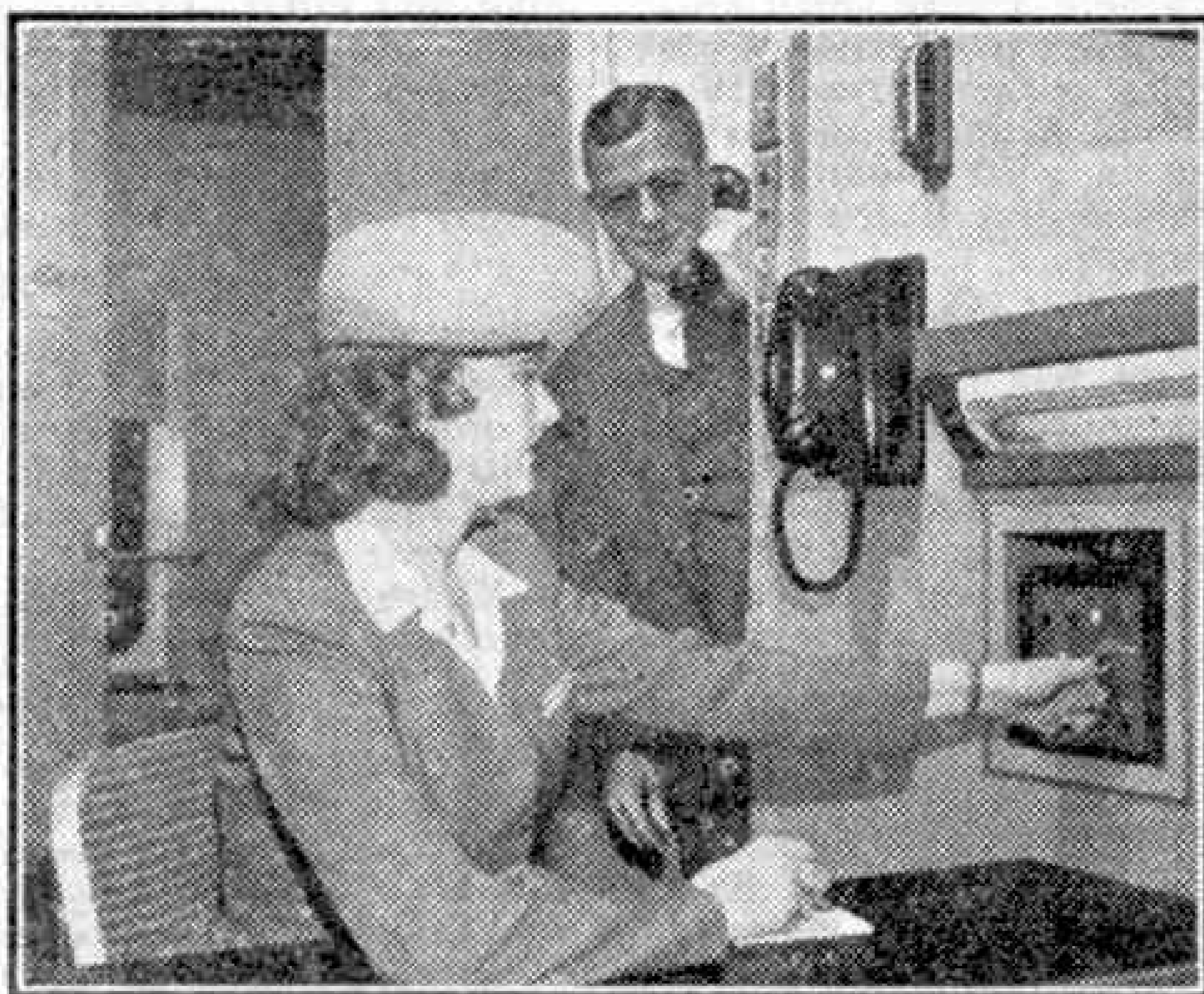
Several crack expresses running between New York and Washington also are equipped with the mobile telephone service. There is for instance, the "*Royal Blue*," special pride of the Baltimore and Ohio route, another diesel-hauled train providing a daytime service over the

223.6 miles between the Union Station, Washington, and Jersey City Terminal.

The other Washington services involved are on the Pennsylvania Railroad and run via Wilmington and Baltimore. "*The Potomac*" provides an afternoon service with parlour and dining cars. "*The Legislator*" is a morning train in each direction with buffet, dining and lounge facilities. Finally "*The Congressional*" has a late afternoon departure and carries similar accommodation.

These trains are used largely by business men and Government officials, among whom the new facility has been extremely popular. The mobile telephone is a boon also to journalists, who can now telephone

news stories from a moving train to the editorial office. A section of the lounge car on each train has been redesigned and set apart to afford privacy to passengers using the service. Railway attendants are on duty to place calls and to locate persons on the train who are being called. The radio telephone equipment on the trains was designed specially for the purpose by the Bell



The telephone operator on the "*Twentieth Century Limited*" putting through a call for a passenger. Illustrations to this article are by courtesy of the New York Central System.

Telephone Laboratories.

To make a call from an ordinary telephone to a mobile telephone equipped train, the caller asks for "Mobile Service," and gives the operator the title of the train or the code number if he knows it. If the train is within the radio transmitting range of the mobile station the operator dials the number, which always consists of two letters and five figures. This causes a signal on the proper radio channel to be sent out to the train and rings the bell on the train telephone.

But the train might be several hundred miles away from the mobile station making the call, and well outside the range of the 250 watt transmitter which these stations



The New York Central "Twentieth Century Limited" in its latest form headed by a twin-unit diesel locomotive. Radio telephone service is provided on this all-Pullman New York-Chicago flier.

use. To overcome this difficulty it has been necessary to build a series of receiver/transmitter land stations along the routes covered by the trains. The mobile service operators know from the timetables supplied to them roughly where the wanted train is, and if it is outside their range they pass the call over ordinary direct telephone lines to the nearest land station. The operator here dials the number and sends out the radio-telephone signal to the train.

When the train attendant picks up the handset to answer, the radio-telephone transmitter on the train automatically comes into action, her voice is picked up by the receiver at the land station which sent out the call, and the circuit is complete. Similarly, a call made from a moving train goes out by radio-telephone to the nearest land station where the wanted number is obtained over the ordinary telephone lines.

On the Washington-New York run, for example, these receiver/transmitter stations have been built at Washington, Baltimore,

Philadelphia, Newark and New York, so that the train is always within range of one or other of the stations.

The service is not unduly expensive. Calls in the local mobile service area cost an average of 35 cents for three minutes, and long-distance calls to or from the train are charged at the ordinary person to person rates.

Mobile service is proving so popular on the trains already equipped that the progressive American companies will no doubt extend the service as fast as they are able to obtain the equipment. Before very long, the Chesapeake and Ohio Railroad hope to have the new mobile telephone service in their express trains "The Chessies," running between Washington and Cincinnati.

Although intended primarily for public use, the mobile telephone is available to the train crew in an emergency. Full details of any accident or breakdown can at once be given to the nearest control centre. This is, in itself, a great point in its favour in the eyes of the Operating Managers.

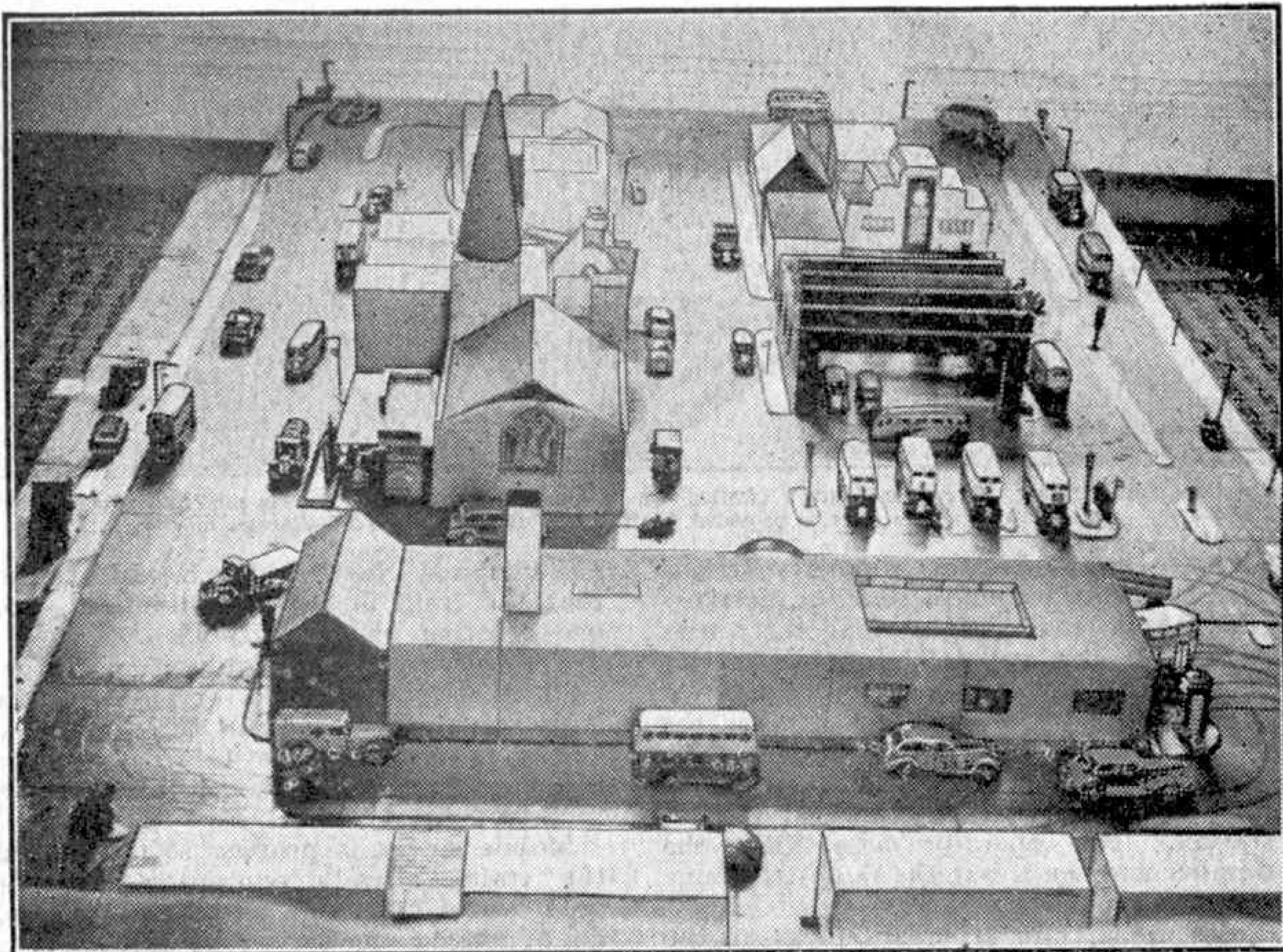
The Six Nations in Canada

Those of us who have revelled in the American Indian stories of Fenimore Cooper and other writers have a hazy notion of what is meant by the Six Nations, the famous confederacy of Indian tribes who fought against the earliest settlers in North America. But how many can give the names of the six Indian tribes included in the confederacy? This began with the Mohawks, Oneidas, Onondagas, Senecas and Cayugas, and later the Tuscaroras were added to complete the six tribes.

During the American revolutionary war the Six Nations took the British side, and at the end of the conflict they left their

homes in what had then become the United States and migrated to Canada, where they were awarded six miles of land on each side of the Grand River, Ontario, to hold "as long as the sun shines and the water runs."

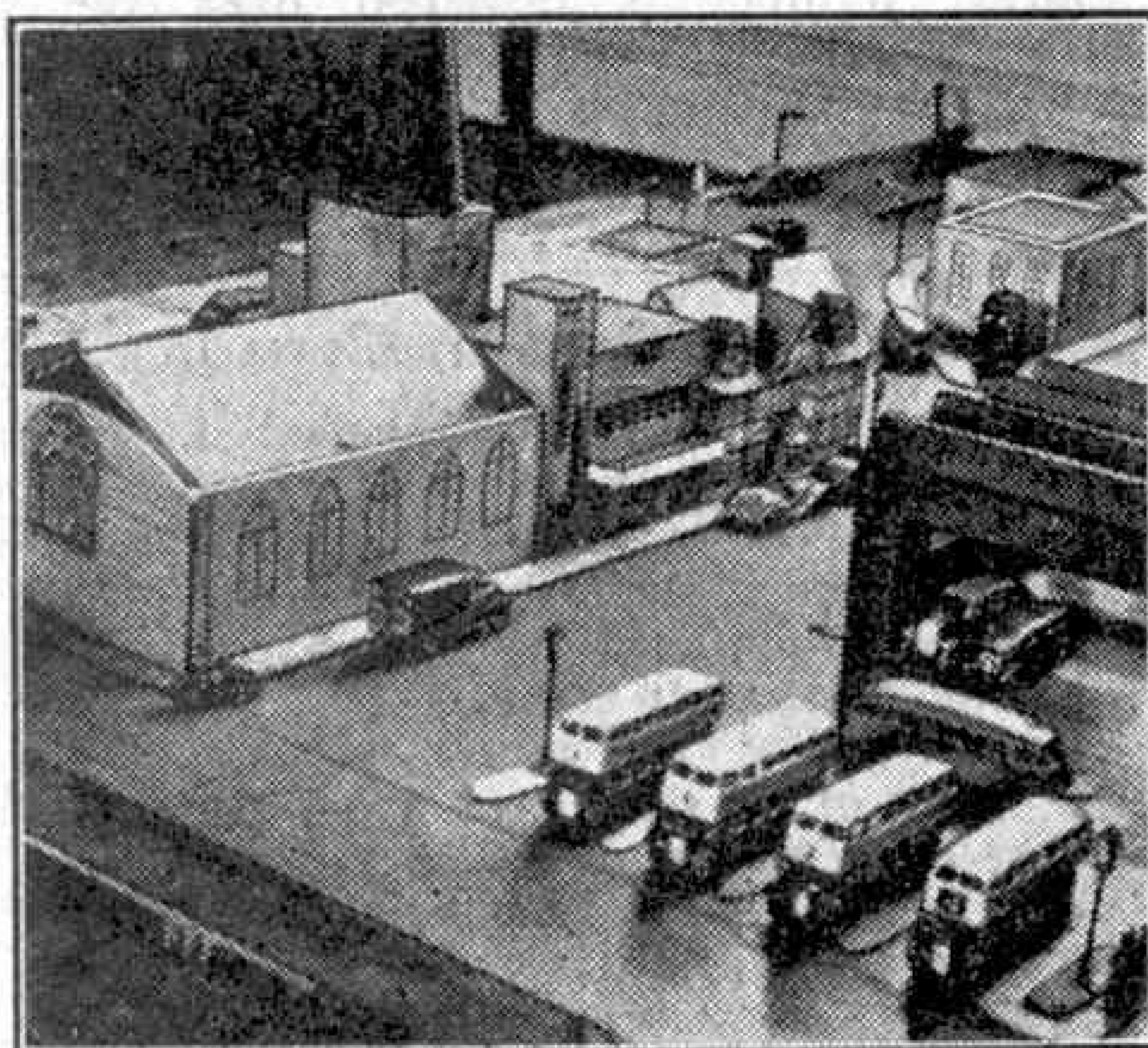
Descendants of the Six Nation braves who then entered Canada are still there on the land granted to them, and a year or two ago they celebrated the 160th anniversary of the signing of the treaty. Wearing their ancient costumes, said to be the finest preserved by any Indian tribes, their chiefs led several hundred of them in a parade that was followed by a banquet at which the Chief of the Onondagas welcomed the crowd in his native tongue.



The Busy Roads of "Lanville"

Traffic in a Dinky Toys Town

MANY Dinky Toys enthusiasts have discovered for themselves that they can get the greatest fun from their hobby by building up layouts on which to operate them. One of the finest and most extensive of these is the model town of Peter G. Lindsay, Liverpool. A general view of this is reproduced at the head of this page, and sections of special interest are shown in the other three illustrations. The designer calls his model town "Lanville." It is constructed on a baseboard, 7 ft. 6 in. in length and 4 ft. in width, made of planks fitted on a framework of 3 in. by 2 in. wood. This has roller-casters fitted at the corners so that the whole model can be rolled out of the way when it is not in use. No packing is necessary, and the "town" is ready to spring to life as soon as the board is pulled out from its resting place.



The Church, "Lanville," with the Royal Cinema entrance alongside. On the right is part of the bus depot, with four Double Deck Buses waiting in the bays of the station.

As will be seen from the general view, "Lanville" has three main roads, Lanville Road and Huntmen Street on the left and right, with Preston Road down the middle, and there are three main cross roads. It will be noticed that Preston Road does not extend the full length of the layout, a feature that introduces a pleasing variety. There are two other streets, hidden by buildings, one of which runs at an angle between Lanville Road and Preston Road. These highways are painted flat grey, and their pavements are made of card, with lines scored on to represent flagstones.

The buildings of the town include a church, a cinema, a fire station and an hotel, with various offices, a garage, filling station, factory, shops and houses. The church, which has a tall spire, is of wood. The Hornby-Dublo Station building makes a fine hotel, and cardboard and similar materials have been put to good use in constructing other buildings.

The roads of "Lanville" are very busy, for there are no less than 57 Dinky Toys at work on them! Of these 16 are public transport vehicles, 19 are private cars, and the rest are lorries, motor bicycles,



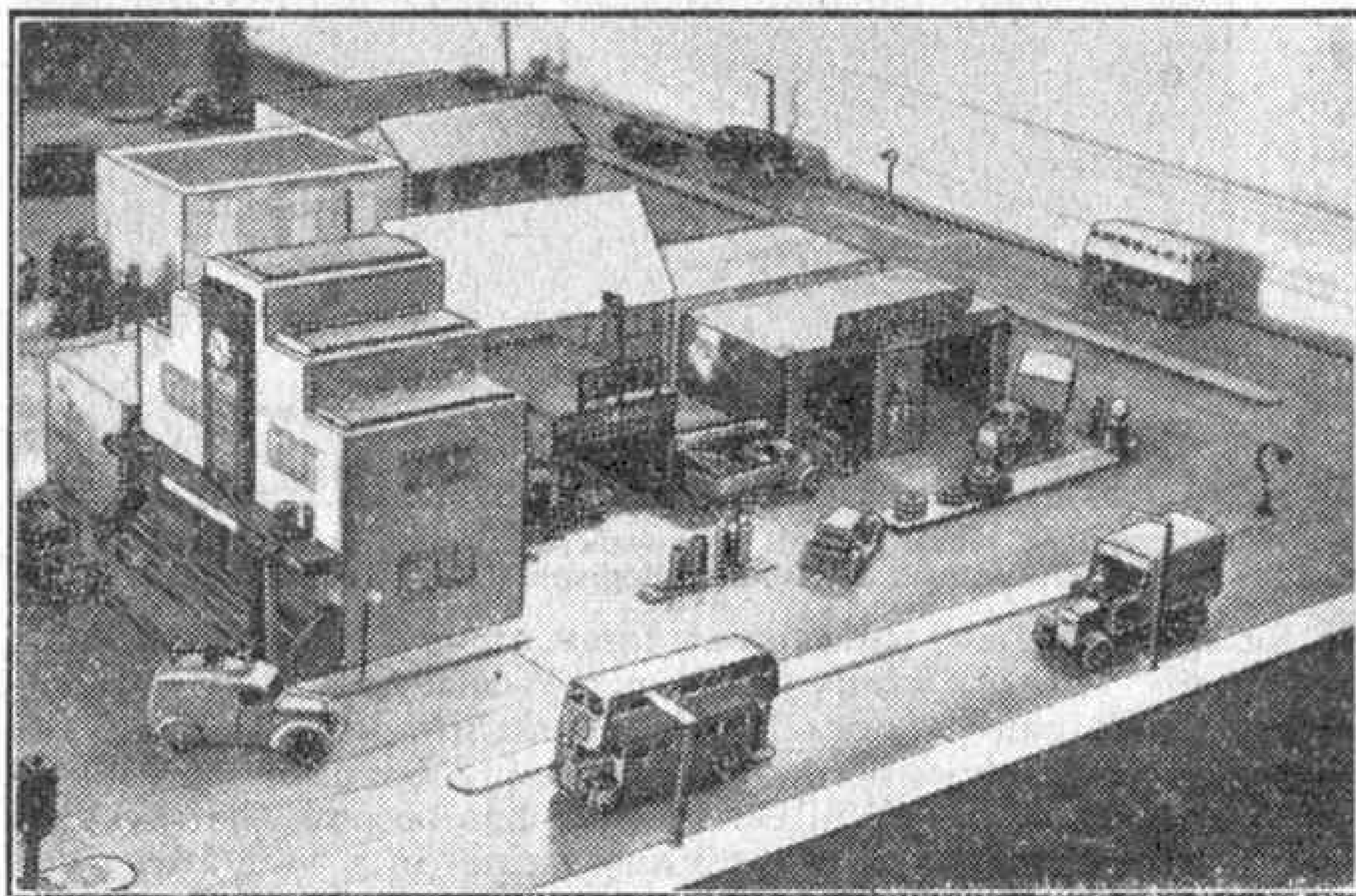
Looking along Huntmen Street, "Lanville."

indicators in the shape of numbered cards slipped into holders fitted in front of them. The Transport Department of "Lanville" still operates tramcars. These are home-made and cover three routes, on one of which there is a stretch of reserved track where speedy running is possible.

Lindsay has paid great attention to little details that help to give an air of completion to his model. For instance, stained glass windows have been provided for the church by glueing cellophane over the window openings and applying water colour paints, which have had the effect of contracting the cellophane and pulling it tight. Constructing lamp posts presented a problem, but this was solved in a very

simple manner by cutting wood pipe-lighter spills to the required length and bending one end over to form the arm from which the lamp is suspended. Small rolls of paper fixed on the arms with glue represent the shades.

The addition of more model people would increase greatly the realism of the model, and Lindsay intends shortly to give "Lanville" more life by including them.



A busy corner of "Lanville," showing the hotel and garage and filling station.

etc. The public services are a special feature of the town. There is a large bus depot, in front of which is a station with bays where buses for four different routes fill up. Double Decker Buses, 10 in number, are used for the regular services, and they also do good work as football specials. In rush hours the service is augmented by the running of four single decker buses. All vehicles are provided with route

A Dales Rope Maker

Where an Old Craft still Flourishes

By Sydney Moorhouse, F.R.G.S.

IT may seem difficult to think of any connexion between the bales of coloured cotton waste sent out from the mills of the industrial north and the farmers of the Yorkshire Dales, but the link is there all right.

Enter the little shed of W. R. Outhwaite and Son, Rope Makers, in the upper Wensleydale township of Hawes, and you will see these bales stacked high against one of the walls. Hanging from the roof and from numerous hooks is a varied assortment of ropes, cow halters, horse backbands and other products, and the fact that these are made from strands of different bright colours never fails to surprise those accustomed only to the greyish ropes of other parts of the country.

"Cotton waste is made up of all kinds of colours," the proprietor explains, "and by mixing the strands we get quite a pleasing appearance." Throughout the Yorkshire Dales and even further afield you can recognize Outhwaite's ropes by the colour schemes that seem to imply something of the pattern weaver's art.

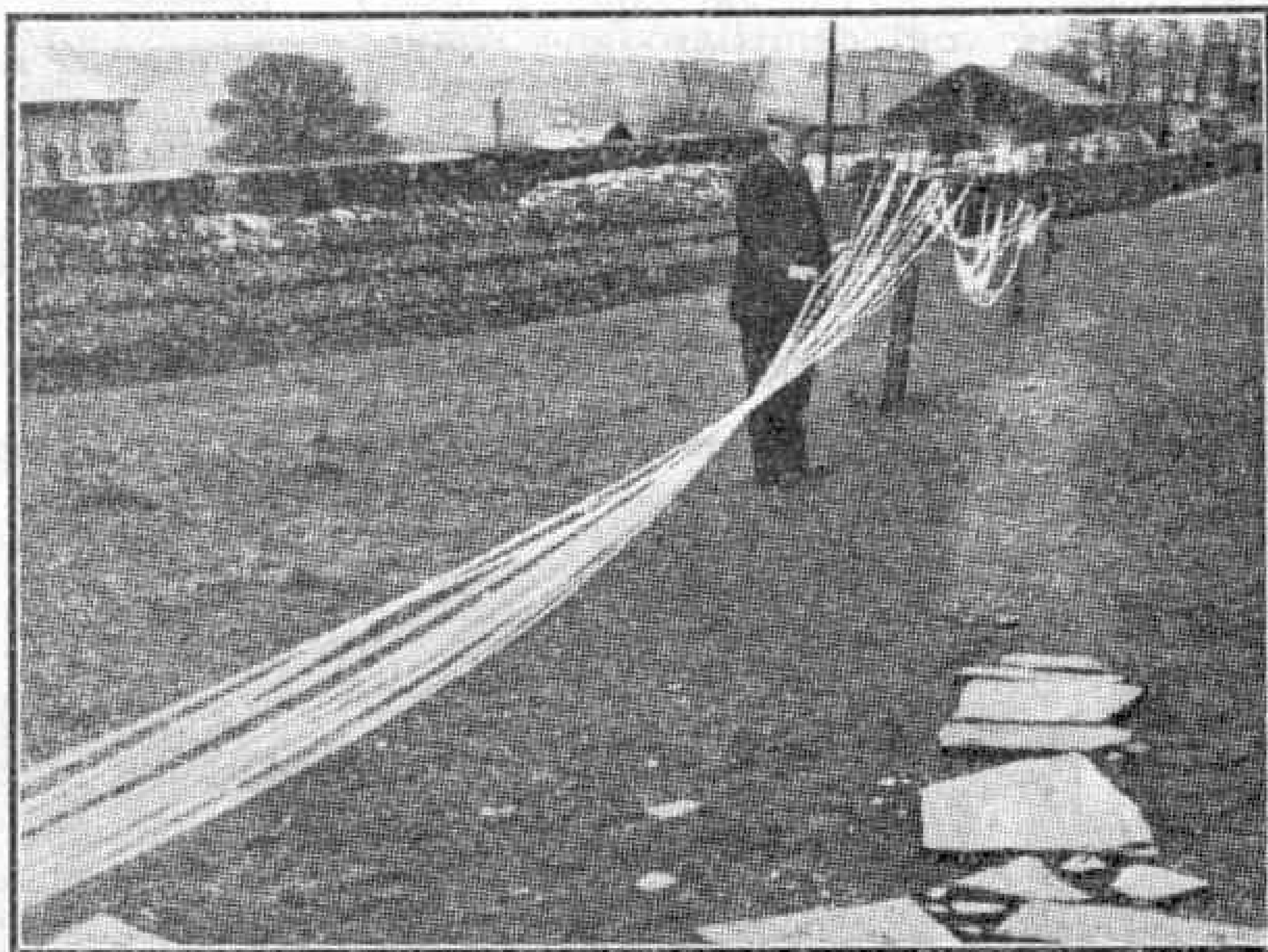
The cotton waste comes along in bales, and the strands must be spun or twisted into yarn suitable for use in rope making and other forms of work. This is done by means of a twisting frame consisting of a large hand-turned wheel, not unlike that of the old spinning frames, which sets four pulleys, known as "twirls," into rotation. The fibres are fixed to hooks at the end of these pulleys and then passed over a series of arms out of the shed and across an adjoining field to a fixed end. The large wheel is turned, and so the fibres are twisted into the yarn.

Once the yarn is there, making a rope from it is a job of only a few minutes. The twisted strands are passed from a set of rotating hooks to a fixed hook some yards away, then a ratchet and cog sends them whirling round, and in next to no time

there is a new rope, again in those different colours that add such a touch of distinction to Mr. Outhwaite's work.

An interesting feature of this is that the twist now imparted is in the opposite direction to that bestowed by the preliminary spinning, and greatly adds to the strength of the rope.

Modern machinery finds no place in Mr. Outhwaite's little workshop. He has been spinning ropes by hand for nearly 40 years, and his methods have earned



Village rope maker on his rope-walk at Hawes, in Wensleydale. The illustrations are from photographs by G. Bernard Wood.

him great fame among the farmers, not only of his own Wensleydale, but throughout North Yorkshire and across the borders of adjoining counties. "Send to Will Outhwaite" has become the accepted phrase for any farmer in a wide area when a new rope is required, or an old one shows signs of wear through prolonged use, and never once during that 40 years has he been unable to meet the request.

Halters for cows and backbands for horses, the latter used mainly for hay sleds in the Dales country, are woven on a primitive loom, which doubtless accounts for an appearance so like that produced in pattern weaving. The origin of the loom seems lost in time. "It's no use asking me how old it is," Mr. Outh-

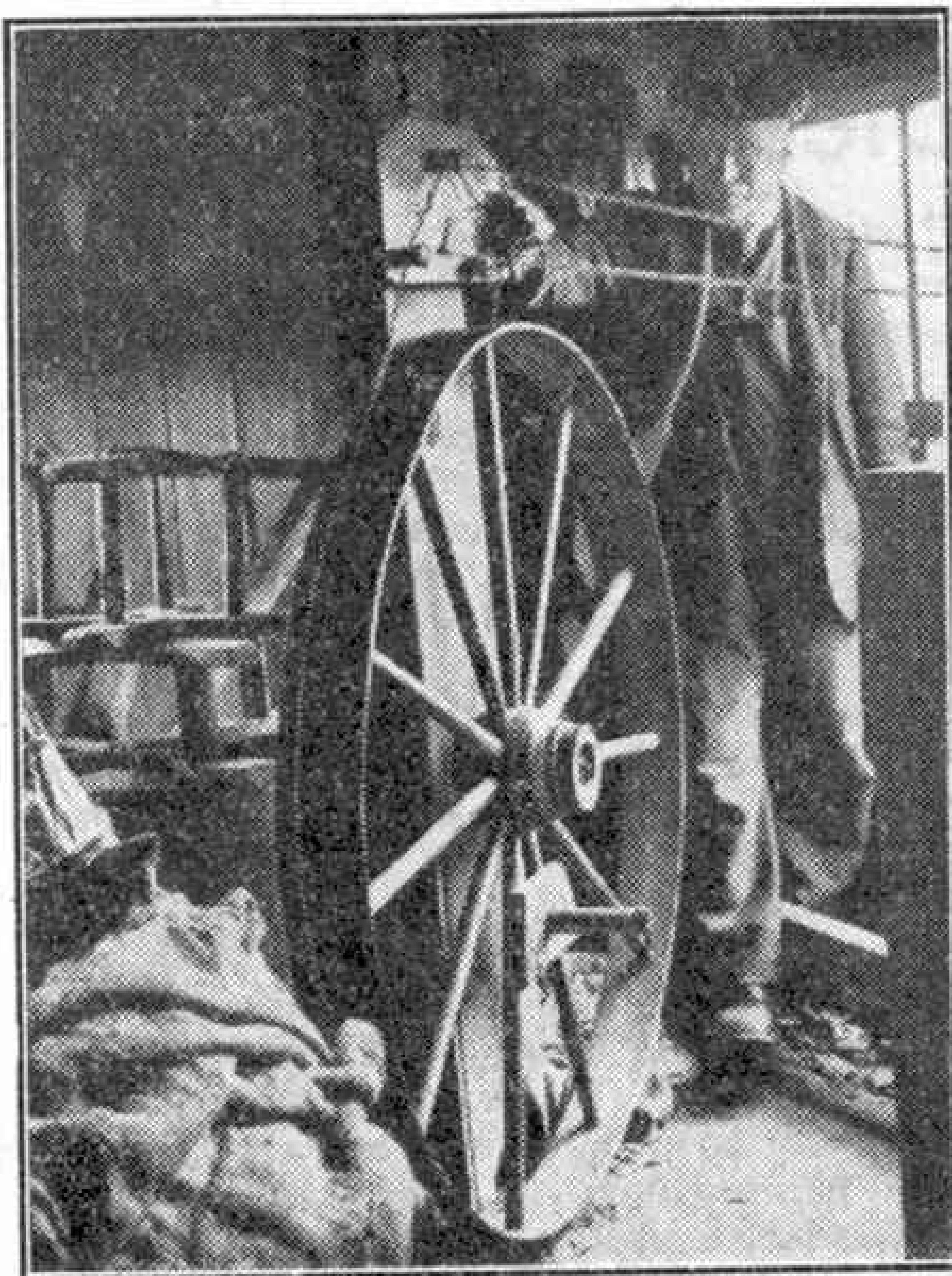
waite puts in; "I've had it over 30 years and it was not a new one then."

There are other products from this little shop that find their way throughout the Dales. Among the Pennine fells are places where winter food for cattle and even sheep has to be carried by means of creels, and these too are made in Mr. Outhwaite's workshop. To make them hazel boughs obtained locally are bent into semi-circular form, and then a lattice-like arrangement of tarred twine is woven round, so that the finished product is not unlike a child's bedstead. The fodder is placed inside the creel, and a strong rope is fixed from the tops of the boughs to carry the load to the heights. One has only to stand outside the workshop and look at the heights of Great Shunnor Fell, separating Wensleydale from mountainous Swaledale, or the grim fells that act as a barrier between the Ure and Ribble, to see how steep their slopes are and how in times of snow any form of wheeled transport could never hope to cope with the feeding situation. Pulling a load of hay in a creel is a strenuous job, but the dalesmen who do it are as tough and wiry as the black-faced Swaledale sheep that roam the uplands, summer and winter alike.

Dales sheep are notorious for their agility in jumping the drystone walls of the northern fells, so that ties are made for hobbling them and thus confining them to their own runs and pastures.



A primitive but very efficient twisting machine.



The spinning wheel of the Hawes rope maker.

Rabbit nets also are made from time to time, and even traps are cunningly devised from wire and twine. "I never knew a rabbit escape from one of Will Outhwaite's traps," a dalesman informed me. So the waste from the cotton mills is playing its part in ridding the Dales farms of their rabbit population.

Market day in Hawes brings in farmers from all the Dale, and the stall that stands in front of Mr. Outhwaite's shop on this day is always the centre of a busy throng. It is a picturesque affair, with its ropes of different coloured strands, its halters, backbands and creels, with the odd rabbit net and trap displayed in readiness for those seeking something to deal with that age-old agricultural pest. Indeed, until I saw it myself, I could never have believed that a rope maker could possibly exhibit so colourful and varied a display.

Before the war, however, Will Outhwaite was not a little worried. His son had decided to take up another trade, and it seemed as though the old business would eventually follow that of many other rope-making establishments in the Dales. Then, after a spell in the Army, the son decided to follow in his father's footsteps, and now it looks as though W. R. Outhwaite and Son will continue to furnish this link between cotton and agriculture for many more years to come.

Diesel Boat that Pushes Canal Barges

EVER since canals came into existence barges on their waters have been pulled, first by horses walking along the tow path, and later by tugs driven by steam and diesel engines. In addition, engines have been fitted on many barges. Now a revolutionary idea has been introduced in the form of a propelling unit that pushes barges along instead of pulling them.

The new craft, to which the name "*Bantam I*" has been given, has been designed by E. C. Jones & Son (Brentford) Ltd. The illustration on this page shows how it works. It is manoeuvred up to the stern of the barge that it is to push, and hawsers from its head are taken round bollards on the barge back to winches on the "*Bantam*." The wires are then wound in tightly to bring the two craft together, care being taken to keep them exactly in line fore and aft. In effect this changes the barge into a self-propelled unit throughout its voyage. The steering position has been built sufficiently high to allow the helmsman to see over the top of an empty 250 tons barge in front of him, and abaft of the wheelhouse is a cabin to accommodate two men.

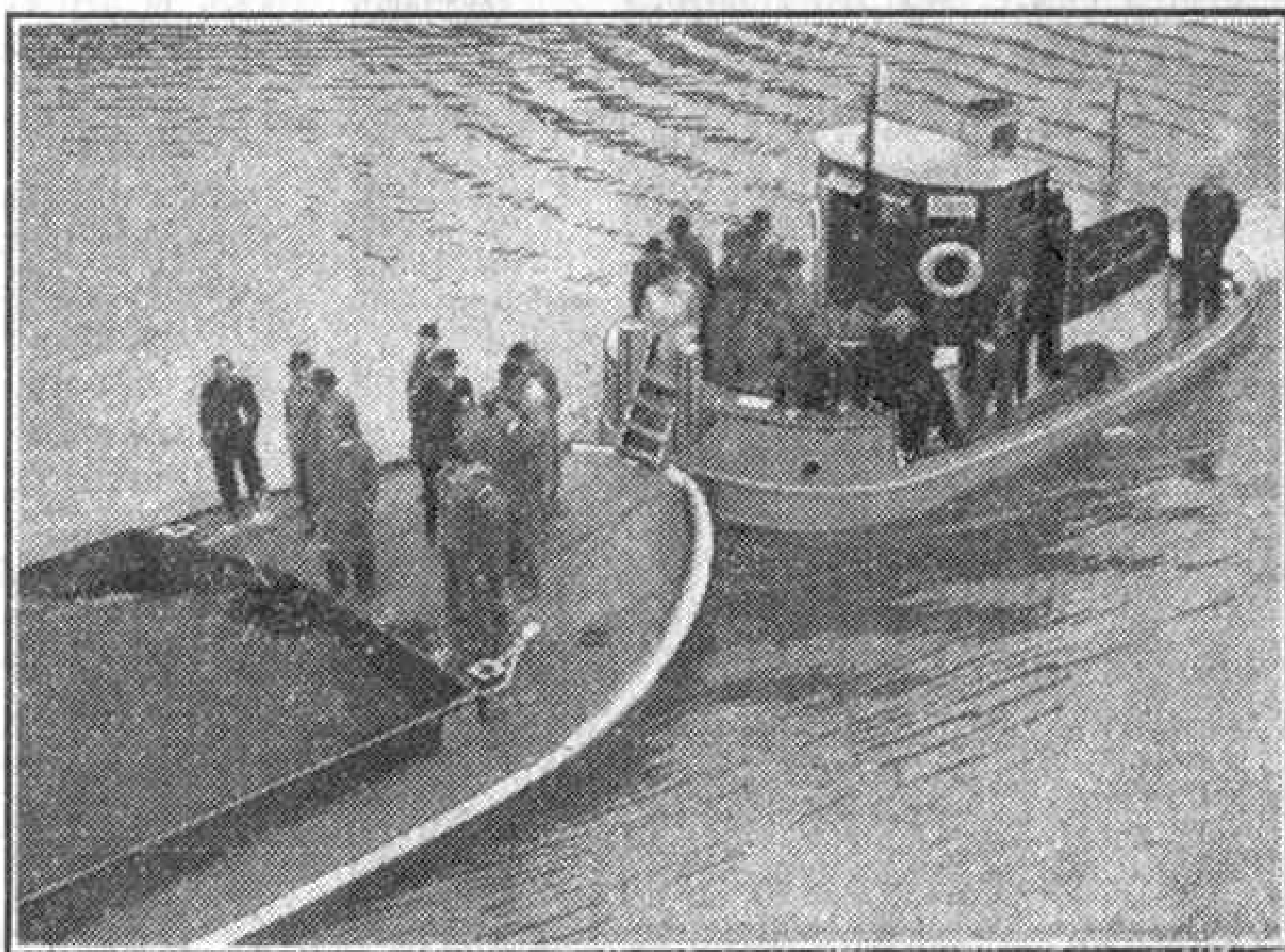
This interesting scheme has many advantages. To begin with, the measure of control over the most cumbersome barge will allow working in flood conditions with greater safety than has previously been possible. A substantial increase in power to manoeuvre also is gained. With the "*Bantam*" there is no difficulty in turning a barge round unaided from the shore when there is sufficient room and depth of water; when towing is in operation this involves taking a line to the bank.

Time also is saved when working through lock systems. A further saving is in cost, for the "*Bantam*" does the steering and barges suitable for use with it can be built without the expensive and troublesome rudders now employed. Existing barges with rudders can be used with the new unit, however; all that is necessary is to put the

rudder over out of the way. Another gain arises from the fact that barges have not to be worked through the wash of a propeller in front of them, which means a saving in engine power.

The new system has a very important advantage over the use of self-propelled barges. When these are heavily loaded their propellers are often very near the bed of the canal and liable to cause damage. On the other hand, when the barges are empty the propellers are too high in the water to be really efficient. With the "*Bantam*" these difficulties are avoided, for the simple reason that the propeller of the pushing unit is always at the same depth, which can be chosen to provide the greatest efficiency in working. The new craft also has the great advantage that its power unit need not be kept idle while cargo is being taken on board its barges or unloaded from them. While one barge is being dealt with the "*Bantam*" can be used for pushing another.

"*Bantam I*", the first of the new barge pushing units, is built of steel and welded throughout. It is 30 ft. long and 12 ft. broad, with a depth of 5 ft. 6 in. It is provided with a 100 h.p. Ruston diesel engine, driving a four-bladed manganese bronze propeller through reduction gear remotely controlled from the wheel house. The maximum speed of the "*Bantam*" alone is 10 knots, and that with a barge is 6 knots. The fuel capacity is 750 tons.



"*Bantam I*" secured to a barge and pushing it along. Photograph by courtesy of E. C. Jones and Son (Brentford) Ltd.

The Story of "Adams No. 563"

As related to the Editor

"I was born at Nine Elms in 1893, of a line of famous 4-4-0 express engines designed for the former London and South Western Railway by Mr. Adams. I had 59 sisters. Thirty of us had 6 ft. 7 in. coupled wheels; the other 30 had 7 ft. 1 in. wheels, and were always considered to be more graceful, but we all did good work and achieved a great reputation.

"Shortly after I had started life, Mr. Drummond became Locomotive Superintendent, and they said that his new engines would drive us off the road, but they didn't; in fact Mr. Drummond took a liking to us, put crests on our splashers, and painted us more lavishly than before.

"By the time the Southern Railway took us over, in 1923, I could boast of having run every kind of train—expresses, boat trains, race specials, and I've run to Weymouth and Exeter just as fast as they do to-day, but with lighter coaches, of course. During the last 20 years, however, I've pottered around Surrey and Hampshire with stopping trains and pick-up goods trains, doing any odd jobs in the way of strawberry specials, empty stock trains and so on. I've often given some of the "modern" drivers quite a surprise; they would climb on my footplate and make rude remarks to their firemen about "this old crab"; but when they left me, it was usually with compliments.

"By 1945, my career was finished. I stood on the scrap siding at Eastleigh Shed for two years, with several sisters and some 0-4-2 "Jubilees" and old Brighton engines. In 1947 they decided we were a nuisance and we were parked out in the country, in the Test Valley,

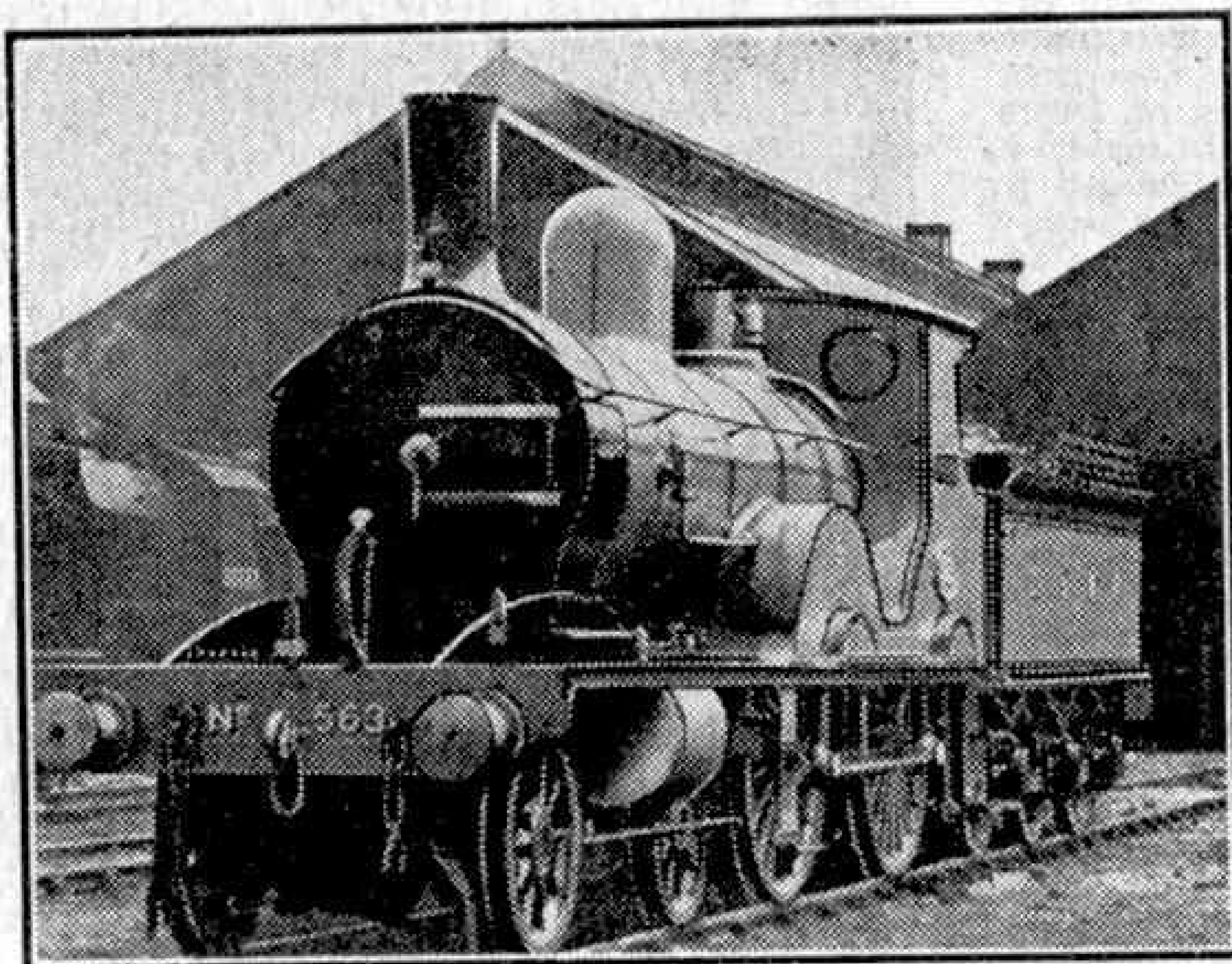
where birds found nesting places on us. From time to time enthusiasts came on bicycles to take our photographs; we had lost our brass parts, and some, like me, had various bits secured with rope. We looked a sorry sight!

"Then one day, some officials I recognised came along and looked us up and down. I heard them say that one of us was to appear at the Centenary Exhibition at Waterloo Station. At length they said that I looked the best of the bunch; and a day or two later I was hauled, groaning

in my rusty joints, back to Eastleigh Works. Here they stripped the paint off me, finding in the process one of my original coats of L.S.W.R. green paint underneath many others. They decided to dress me in the style of the 1900 period, and gave me a stove-pipe chimney, two crests and

two brass number-plates. At last I was finished, and they compared me with a number of old photographs, just to make sure. They were a bit anxious, I could see, when it came to the trial run, as they could not afford to spend money on renewing all my working parts, and I had not worked under my own steam for a long time. But I was all right, and away we went up the main line again.

"I duly appeared at the Waterloo Centenary celebrations, and it was just as well that they had taken so much trouble to make sure that I was correct in every detail, for experts from all over the country were there to examine me. I can't give you my present address as it is only temporary, but later on they will find me a place in the Museum, where I shall be proud to represent that fine old railway, the London and South Western!"



Adams 4-4-0 No. 563 restored to L.S.W.R. style of about 1900.
The engine tells its own story on this page.



Club and Branch News



WITH THE SECRETARY

DUTCH CLUB ENTERTAINS BRITISH VISITORS

In the autumn of last year Mr. W. J. Wyse, President of the Norbury M.C., Mr. C. B. Chapman, Leader, and two members of the Club spent an enjoyable week with Mr. Bingen and the members of the Maastricht M.C. I have been greatly interested in a brief account of the visit that Mr. Wyse has sent me, and here give extracts from this that I am sure will interest other Club and Branch members.

"We lived with Dutch members in their homes, and made extensive tours of the Maastricht area, which is rather like our own Surrey countryside. Our journey to Maastricht was via Ostend and Liege, and was very interesting.

"It was a very fine experience to stay in the homes of Dutch people. On the Club night at Maastricht we were privileged to see a film strip showing the history of the Maastricht M.C. The Club has a permanent Club Room with its own Meccano and Hornby trains, tools, such as a lathe and a drill, a large steam engine, and a first-class drawing board; in fact everything that a Club could desire.

"We went on various outings with the members of the Dutch Club. One day we explored the dungeons of Fort St. Pieter and the Limburg Grottoes. These grottoes consist of thousands of passages, extending many miles. During the war they were both a shelter for the Maastricht inhabitants and a factory for V-weapons, and we saw wonderful carvings, drawings and paintings on the walls made by those who sheltered in them.

"We also visited the 'Three Lands Point' at Vaals, where the frontiers of Germany, Belgium and Holland meet. The nationals of all three countries can reach this point without any barrier or Customs shed, so it is very fascinating to the insular-minded Briton.

Of course we all walked a few yards into Germany, and were photographed together at the frontier stones."

Other visits were made to engine sheds, and to a steam tramway in Belgium.

The visitors greatly appreciated the hospitality of the Maastricht M.C. and of the members and their parents with whom they stayed. Later this year members of the Dutch Club will pay a return visit to Norbury, and I am sure that this will be as happy an event as the trip of Mr. Wyse and his companions to Holland. The friendship between these two Clubs is splendid. Even if such an exchange has to stop at correspondence it is of the greatest benefit to all concerned, and when friendly visits also can be arranged the result is delightful.

CLUB NOTES

WINCHMORE HILL COLLEGIATE SCHOOL M.C.—Model Yacht and Model Aeroplane Sections have been formed. A lantern is included in the Club's equipment and Lectures and Talks with slides are given regularly. Table Tennis is the favourite game,

regular Tournaments being held for possession of a cup. A Visit has been made to the Science Museum, South Kensington. Club roll: 26. *Leader:* G. Watts, Collegiate School, Winchmore Hill, London N.21.

HUNTINGDON M.C.—A New Year Party has been held, for which Mr. H. J. Hibbin, President, has provided refreshments on a generous scale. Model-building and Hornby Train operation continue on a large scale, members being awarded prizes for good efforts. Open Nights at which parents can see what the members are doing also are held regularly. Club roll: 55. *Leader:* Mr. J. C. Deaves, 12, Tennis Court Avenue, Huntingdon, Hunts.

ABERDEEN GRAMMAR SCHOOL M.C.—New members



Members of the Norbury and Maastricht Meccano Clubs photographed together at the point where the territories of Holland, Belgium and Germany meet. Mr. Bingen, Leader of the Maastricht M.C., is second from the left, and Mr. Chapman, Leader of the Norbury M.C., is on the right of the stone marking the "Three Lands Point." P. A. Knight, formerly Secretary of the Norbury M.C., is on the extreme left, and M. Rose, another British visitor, is standing behind the boundary stones.

are being enrolled. All bring Meccano Outfits to the Club room for model-building, and good models and interesting mechanisms are closely examined by all. One member has perfected a steering gear for use in a tractor. Club roll: 10. *Secretary:* D. N. Angus, Knoyle, Coronation Road, Culter, Aberdeen.

BRANCH NEWS

WEYMOUTH AND DISTRICT—Regular weekly meetings are held, and one of these each month is devoted to Dinky Toys, new models being displayed and their uses being discussed. The Branch track has taken final shape. It includes a terminus, with a goods platform, sidings and a locomotive depot, and there are also a through station and a wayside halt. Refreshments are provided on Track Nights. *Secretary:* A. J. Brown, 68, Wyke Road, Weymouth, Dorset.

SHIRLEY AND DISTRICT—The Club's Exhibition before Christmas was very successful. The display included Meccano models and a large Hornby Railway, and a Dinky Toy Competition interested visitors, who numbered 350. *Secretary:* D. J. Hancock, 26, Wickham Avenue, Shirley, Croydon, Surrey.

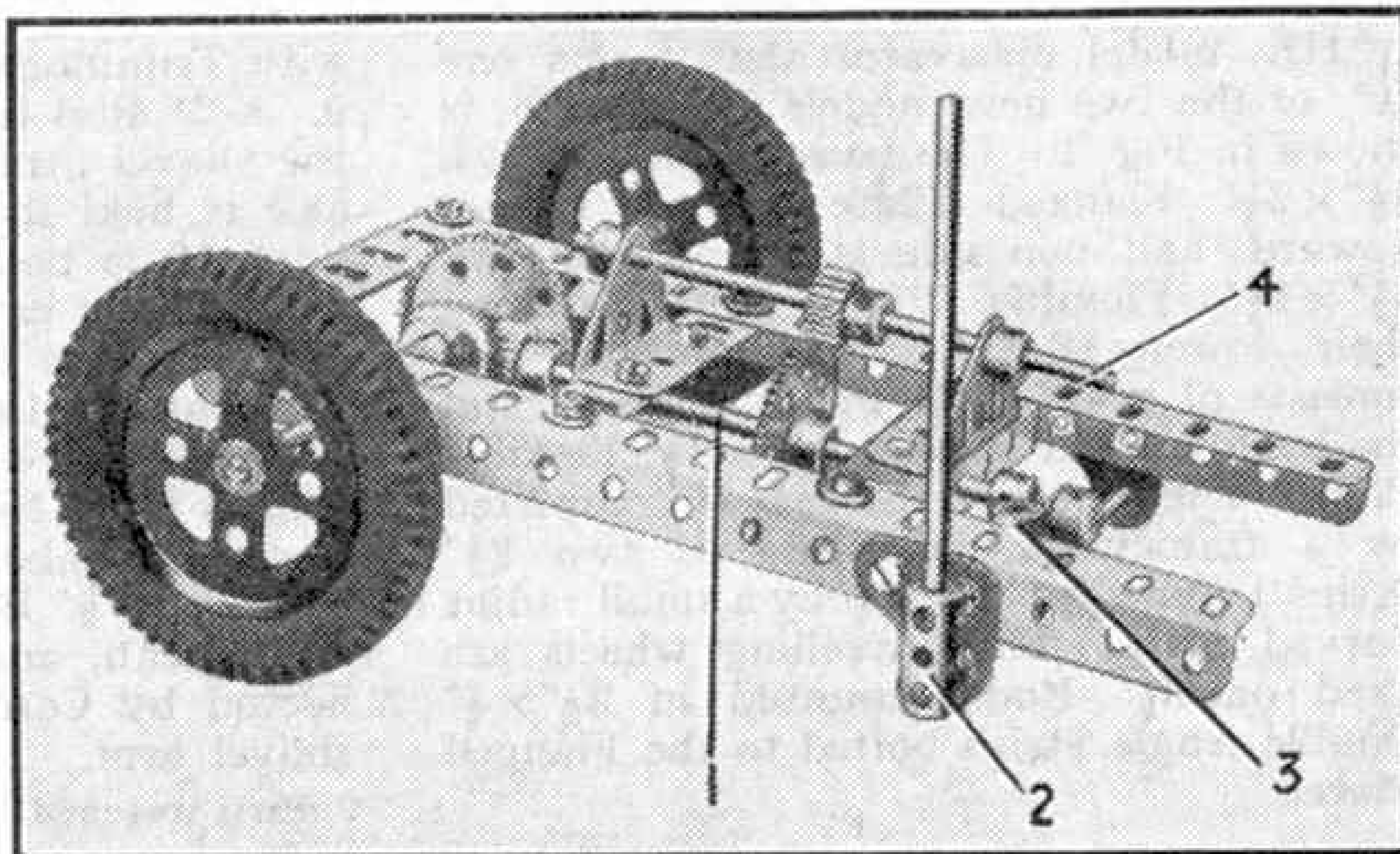
Among the Model-Builders

By "Spanner"

A Compact Reverse Gear for Model Vehicles

The top illustration shows a compact reversing mechanism incorporated in the final drive unit of a model vehicle. The arrangement of the gears in this mechanism is such that an increased gear reduction is provided for movement in the reverse direction. This allows greater control of the vehicle, and the mechanism is particularly suitable for such models as a mechanical horse, in which the tractor unit is required to back on to the trailer.

The rear axle of the vehicle is fitted with a $\frac{3}{4}$ " and a $1\frac{1}{2}$ " Contrate, arranged with their teeth facing. The driving gear is a $\frac{1}{2}$ " Pinion fixed on a Rod 1 mounted in the chassis cross-members. This Rod



Compact reversing mechanism for small model vehicles.

is free to slide within limits in its bearings, and is controlled by a lever locked in a Coupling 2. The Coupling is fixed on a transverse Rod

How to Use Meccano Parts

Slide Piece with Boss (Part No. 50)

The Slide Piece is particularly useful as a guide for sliding mechanisms, such as lift cages and engine crossheads. It has a slotted portion that fits freely over any Meccano Strip, which can then be used as a guide bar. Two examples of the use of Slide Pieces in this way are shown in Figs. 1 and 2. In Fig. 2 they serve as the cross-head slippers of a model horizontal steam engine, sliding to and fro on Strips; while in Fig. 1 they form the sliding portion of an interesting crank movement.

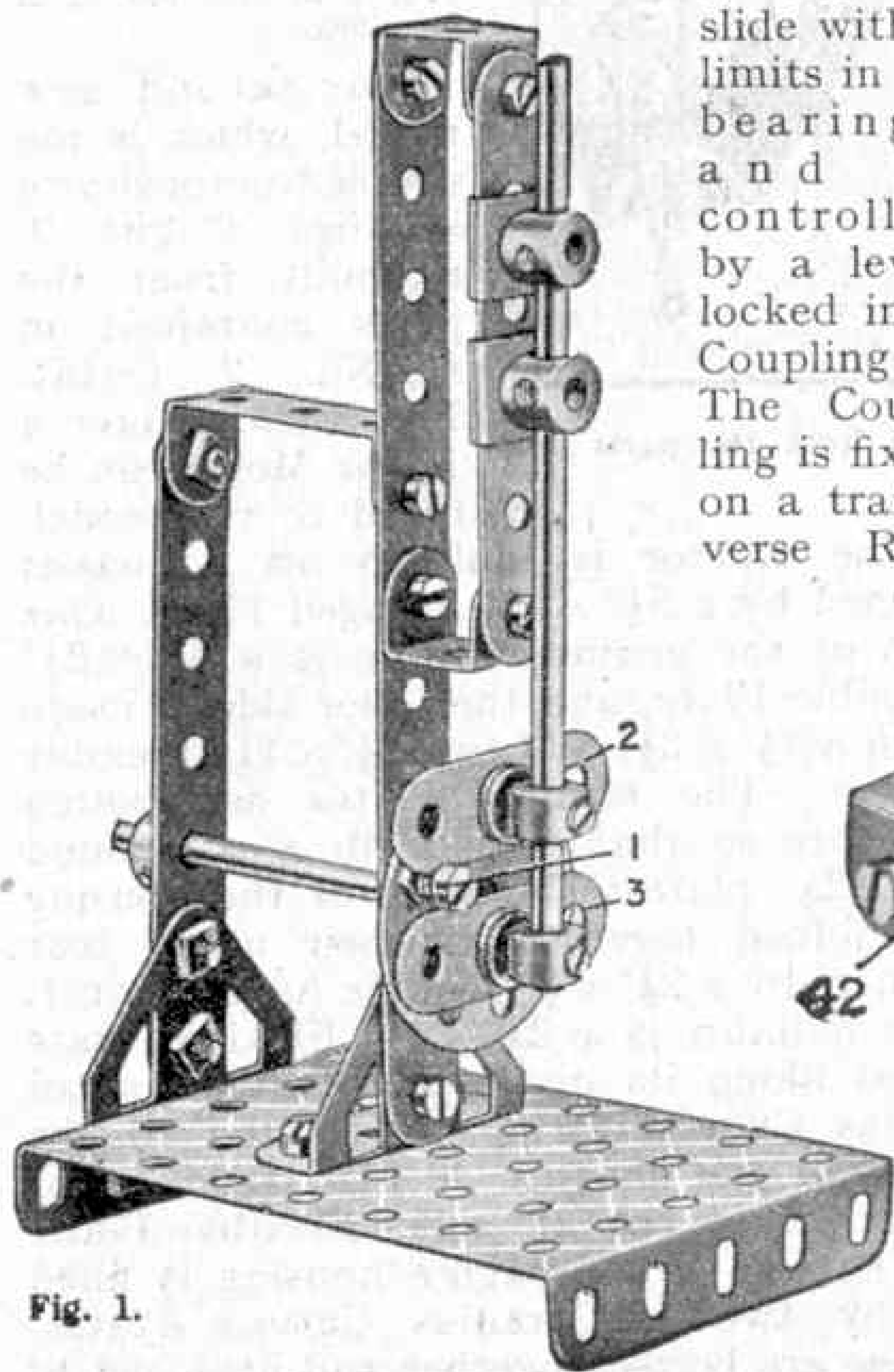


Fig. 1.

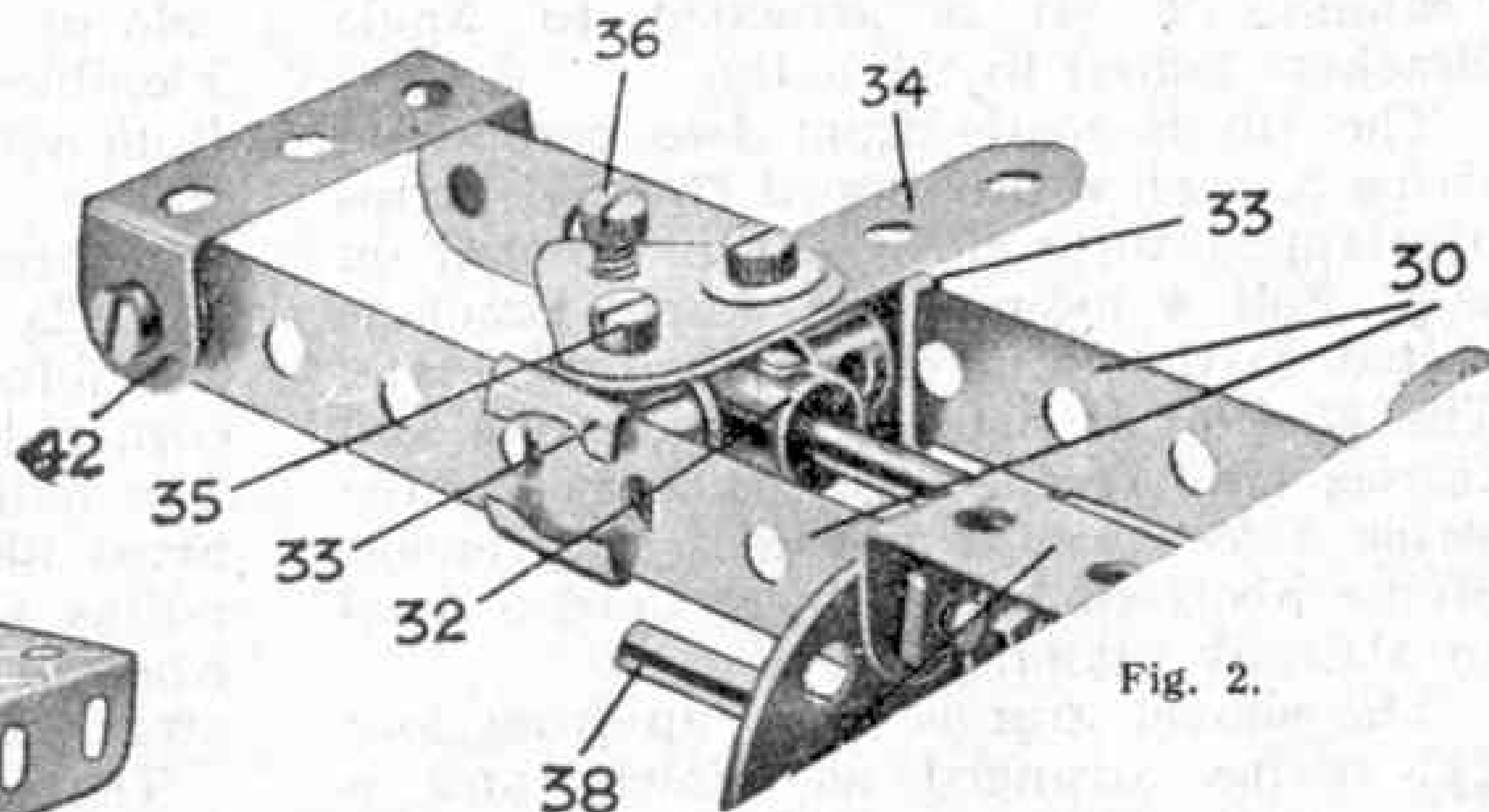


Fig. 2.

Examples of the uses of the Meccano Slide Piece, which are referred to on this page.

New Meccano Models

Mechanical Excavator—Tractor

THE model excavator that forms one of the two new models this month, is shown in Fig. 1. The base of the cab is a $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flanged Plate placed flanges upward, and one side is formed by two $5\frac{1}{2}" \times 1\frac{1}{2}"$ Flexible Plates joined along their lower edges. The opposite side consists of a $4\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate, and the back is filled in by a $2\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate. The front of the cab is completed by a framework consisting of two $2\frac{1}{2}"$ Strips 1 joined at the top by a small radius Curved Strip. The travelling wheels are fixed on $3\frac{1}{2}"$ Rods mounted in $2\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strips bolted to the Flanged Plate.

with Trunnions 8 and two Angle Brackets 9. A 2" Rod is passed through the end of the shovel arm and the Angle Brackets 9 and is held in place by Spring Clips. A Cord 10 is tied to the shovel and to the front of the cab. The length of this Cord is adjusted so that when the jib is lowered it imparts a digging motion to the shovel.

The shovel arm is raised by a lever 11. This is fixed to a Bush Wheel that carries also a Fishplate 12. The Bush Wheel is fixed on a $\frac{3}{8}"$ Bolt passed through the side of the cab, and the Fishplate 12 is connected by Cord to the upper end of the shovel arm.

Parts required to build the model Excavator:

4 of No. 2; 6 of No. 5;
1 of No. 10; 8 of No. 12;
2 of No. 16; 1 of No. 17;
1 of No. 19g; 4 of No. 22;
1 of No. 24; 3 of No. 35;
45 of No. 37a; 38 of
No. 37b; 4 of No. 38; 1
of No. 40; 2 of No. 48a;
1 of No. 52; 2 of No. 90a;
4 of No. 111c; 1 of No.
125; 2 of No. 126; 2 of
No. 126a; 1 of No. 187;
2 of No. 189; 2 of No.
190; 1 of No. 191; 2 of
No. 200.

Our second new model, which is the simple tractor shown in Figs. 2 and 3, is built from the parts contained in a No. 2 Outfit. Fig. 3 shows how a *Magic Motor* can be fitted to the model.

The tractor is built-up on a chassis formed by a $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flanged Plate. One side of the engine housing is a $4\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate, and the other side is made from a $2\frac{1}{2}" \times 2\frac{1}{2}"$ and two $2\frac{1}{2}" \times 1\frac{1}{2}"$ Flexible Plates. The smaller Plates are bolted together so that they form a compound $4\frac{1}{2}" \times 2\frac{1}{2}"$ plate. The sides of the housing are joined together at their upper rear corners by a $2\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strip 1. The radiator is a $2\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate fitted along its upper edge with a small radius Curved Strip, and bolted to the front of the chassis. A Flat Trunnion is attached to the $2\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate.

The top of the engine housing is filled in by two $1\frac{1}{8}"$ radius Curved Plates. These are bolted together and attached to

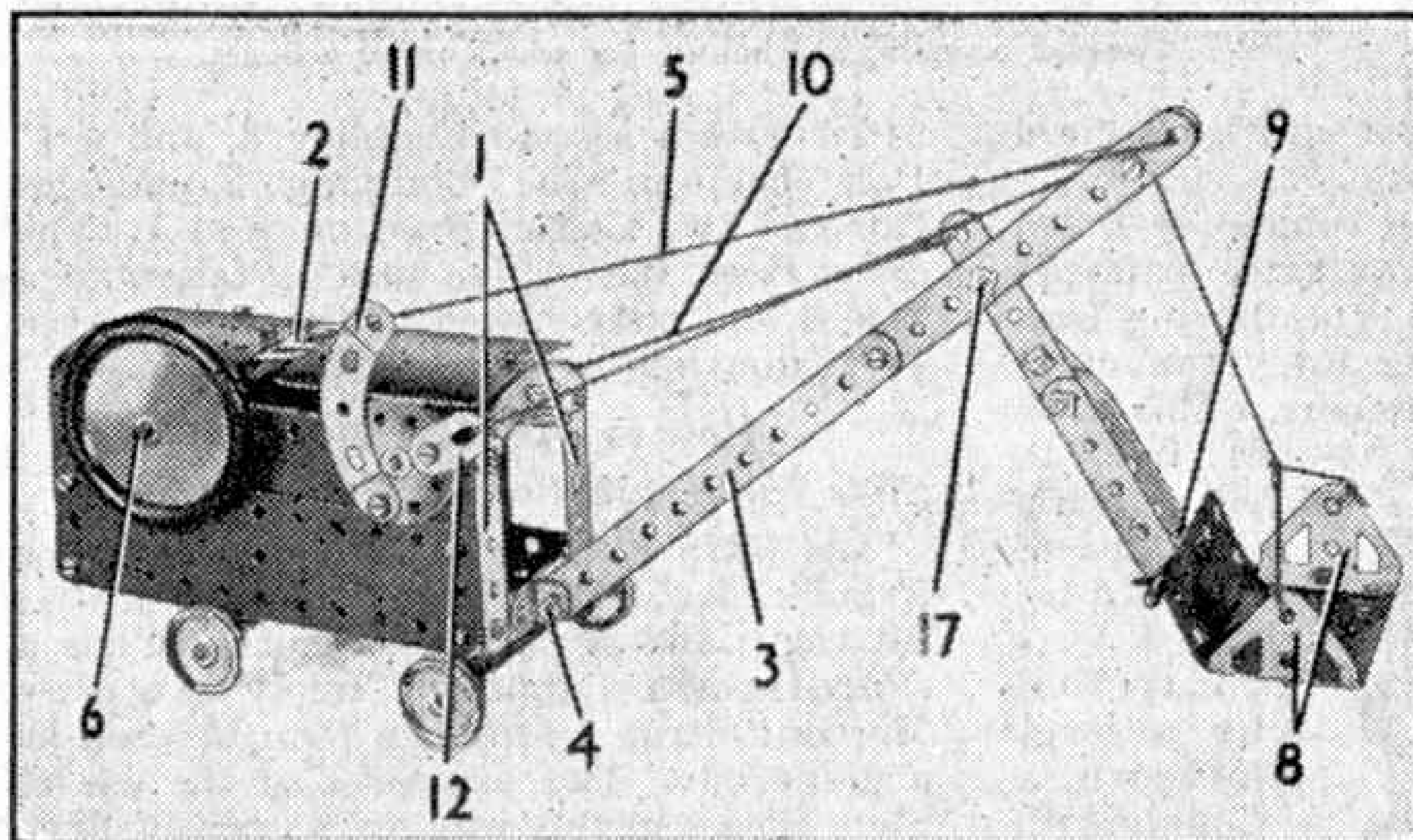


Fig. 1. This working model of an excavator can be built from the parts in Outfit No. 2.

The roof is formed by two $1\frac{1}{8}"$ radius Curved Plates connected by a Flat Trunnion 2. It is attached to Angle Brackets bolted to the sides.

The jib is made from two compound strips 3, each consisting of two $5\frac{1}{2}"$ Strips overlapped three holes. It is pivoted on a $\frac{3}{8}"$ Bolt 4 mounted in Angle Brackets bolted to the front of the Flanged Plate. The $\frac{3}{8}"$ Bolt is fitted with lock-nuts and carries two Washers placed between the strips 3 for spacing purposes. Movement of the jib is controlled by a Cord 5 fixed to a Crank Handle 6.

The shovel arm is built up from four $2\frac{1}{2}"$ Strips arranged as shown, and is lock-nutted to the jib at 7. The shovel is made from a $2\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate fitted

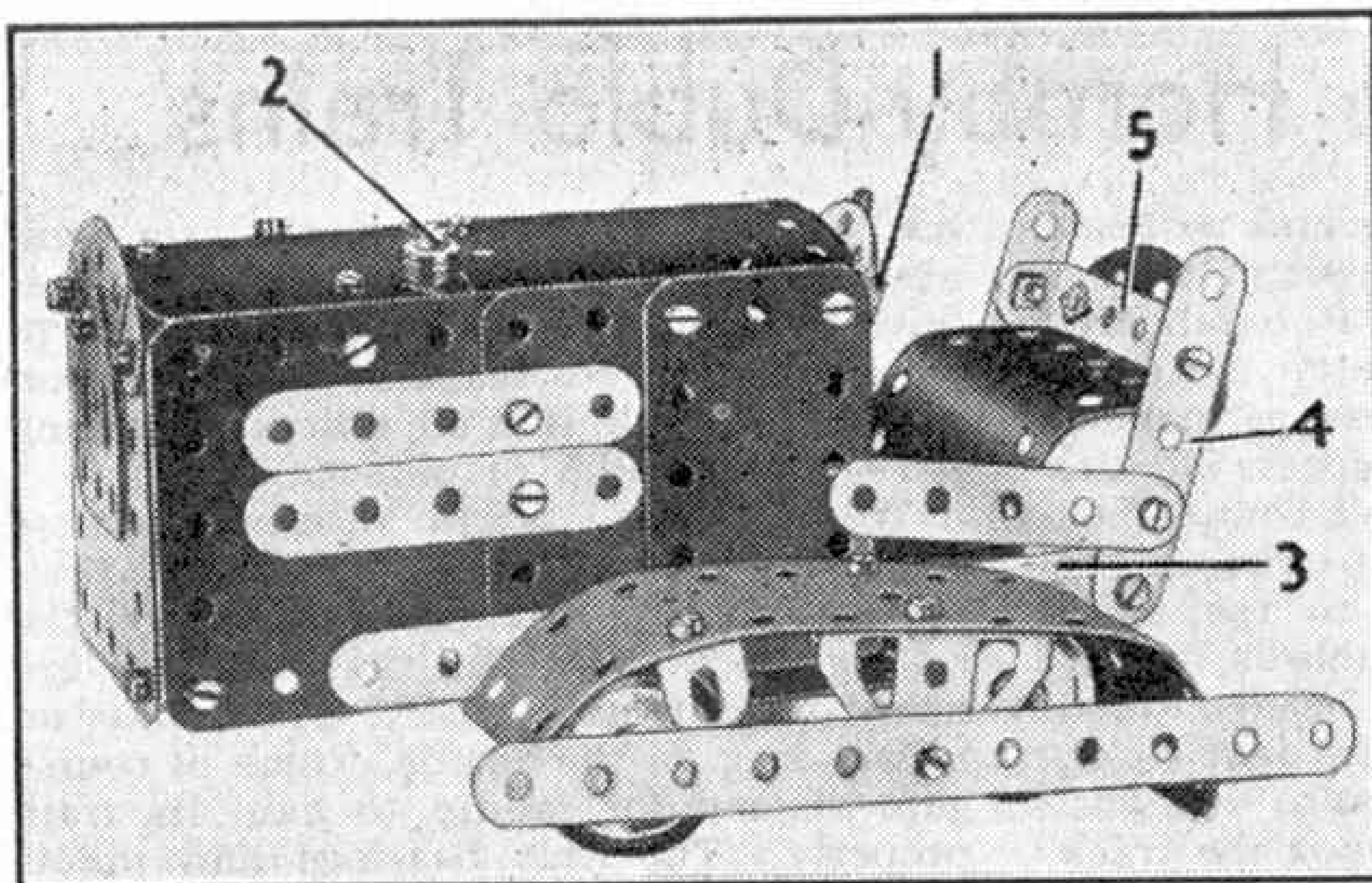


Fig. 2. Outfit No. 2 contains all the parts required to build this realistic model tractor.

the sides and to the radiator by Angle Brackets. A $\frac{3}{8}$ " Bolt 2 fitted with four Washers represents a vertical exhaust pipe from the engine.

The $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flanged Plate of the chassis is extended by a $5\frac{1}{2}"$ Strip 3 bolted along each of its longer sides. The Strips are fixed in position so that they overlap the rear of the Flanged Plate by two holes, and they support a $2\frac{1}{2}"$ Strip 4 on each side that forms part of the driving seat. The $2\frac{1}{2}"$ Strips are connected at their upper ends by a $2\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strip 5 fitted with a small radius Curved Strip. The seat proper is a U-section Curved Plate that is opened out slightly and attached to the rear of the Flanged Plate. Two further $2\frac{1}{2}"$ Strips are fixed as shown to complete the sides of the driving compartment. The track covers are $5\frac{1}{2}" \times 1\frac{1}{2}"$ Flexible Plates curved at each end and attached to Angle Brackets bolted to the chassis. A $5\frac{1}{2}"$ Strip is fixed to each of the $5\frac{1}{2}" \times 1\frac{1}{2}"$ Flexible Plates by a Trunnion.

The steering wheel is a Bush Wheel fixed on a $\frac{3}{8}$ " Bolt passed through the $2\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strip 1, and the front of the driving compartment is partly filled in by a Flat Trunnion also attached to the Double Angle Strip. A control lever is represented by a 2" Rod held in an Angle Bracket fixed to one of the $2\frac{1}{2}"$ Strips.

The travelling wheels are 1" Pulleys fitted with Rubber Rings, and they are fixed on $3\frac{1}{2}"$ Rods mounted in Fishplates bolted to the chassis. A *Magic Motor* can

be attached to the $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flanged Plate between the axles, and connected to a $\frac{1}{2}"$ Pulley on the leading axle by a $2\frac{1}{2}"$ Driving Band.

Parts required to build model Tractor: 4 of No. 2; 6 of No. 5; 4 of No. 10; 6 of No. 12; 2 of No. 16; 1 of No. 17; 4 of No. 22; 1 of No. 23a; 1 of No. 24; 40 of No. 37; 4 of No. 38; 2 of No. 48a; 1 of No. 52; 2 of No. 90a; 2 of No. 111c; 2 of No. 126; 2 of No. 126a; 4 of No. 155; 1 of No. 186; 2 of No. 188; 2 of No. 189; 2 of No. 190; 1 of No. 191; 1 of No. 199; 2 of No. 200. 1 *Magic Motor*.

Special "Outfit" Competition

Our competition this month will appeal specially to the owners of small Outfits, as entries are limited to models built from the parts contained in Outfit No. 4. It is not necessary to use all the parts in this Outfit.

Competitors may build any kind of model, but the more original the subject the better will be its chance of success. When the model is completed a photograph or a sketch of it should be made and sent to "Meccano Outfit No. 4 Contest, Meccano Limited, Binns Road, Liverpool 13." Each illustration submitted must have the competitor's age, name and address on the back, and a list of parts used in the model must be attached.

Entries will be divided into Section A, for competitors in the British Isles, and Section B, for competitors Overseas. Closing date for Section A, 30th April; for Section B, 30th July.

The following prizes will be awarded in each Section. First, Cheque for £3/3/-; Second, Cheque for £2/2/-; Third, Cheque for £1/1/-. There will be also five prizes each consisting of a P.O. for 10/6 and five prizes each of 5/-.

Prize-winning entries become the property of Meccano Ltd. and are not returnable to senders.

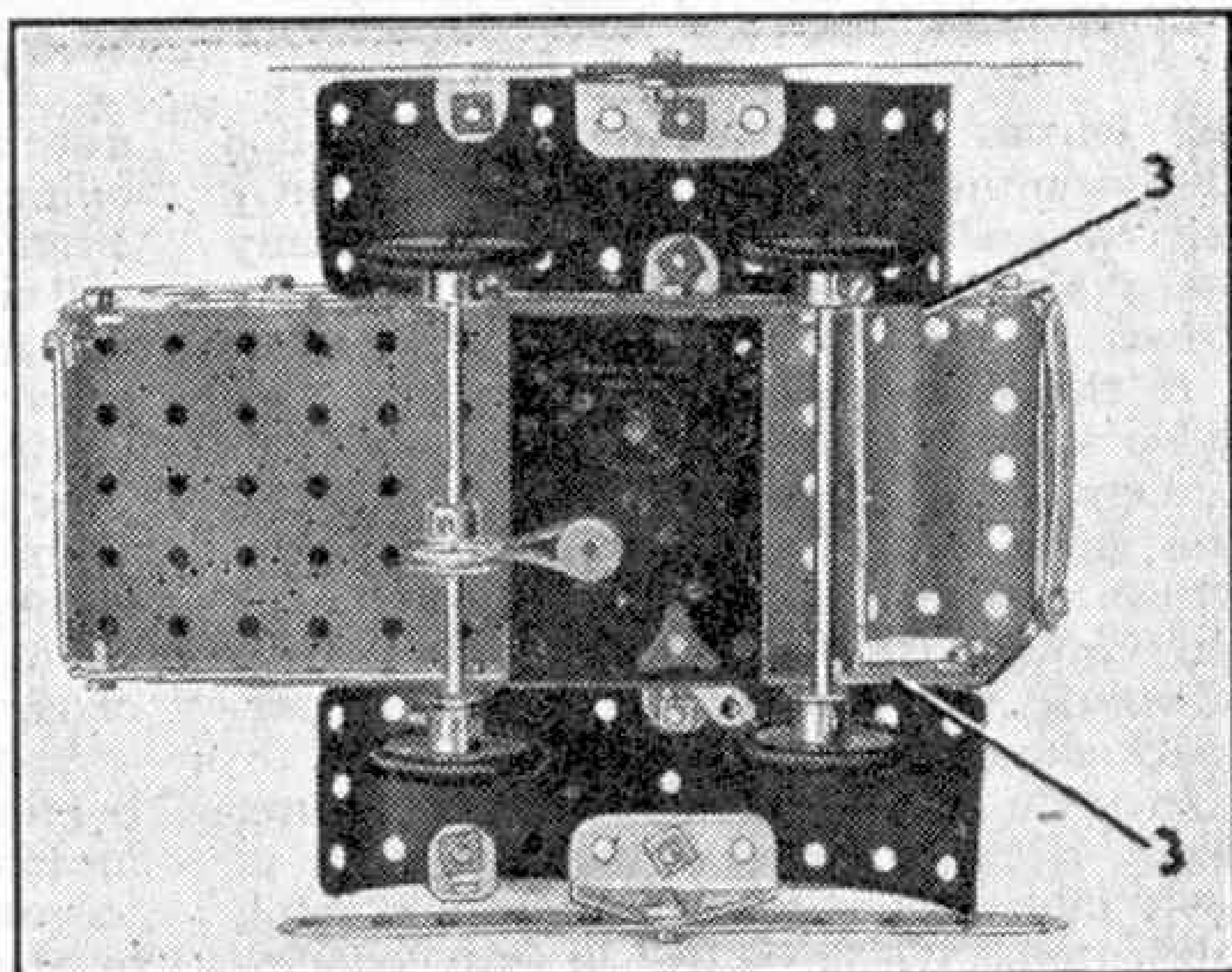
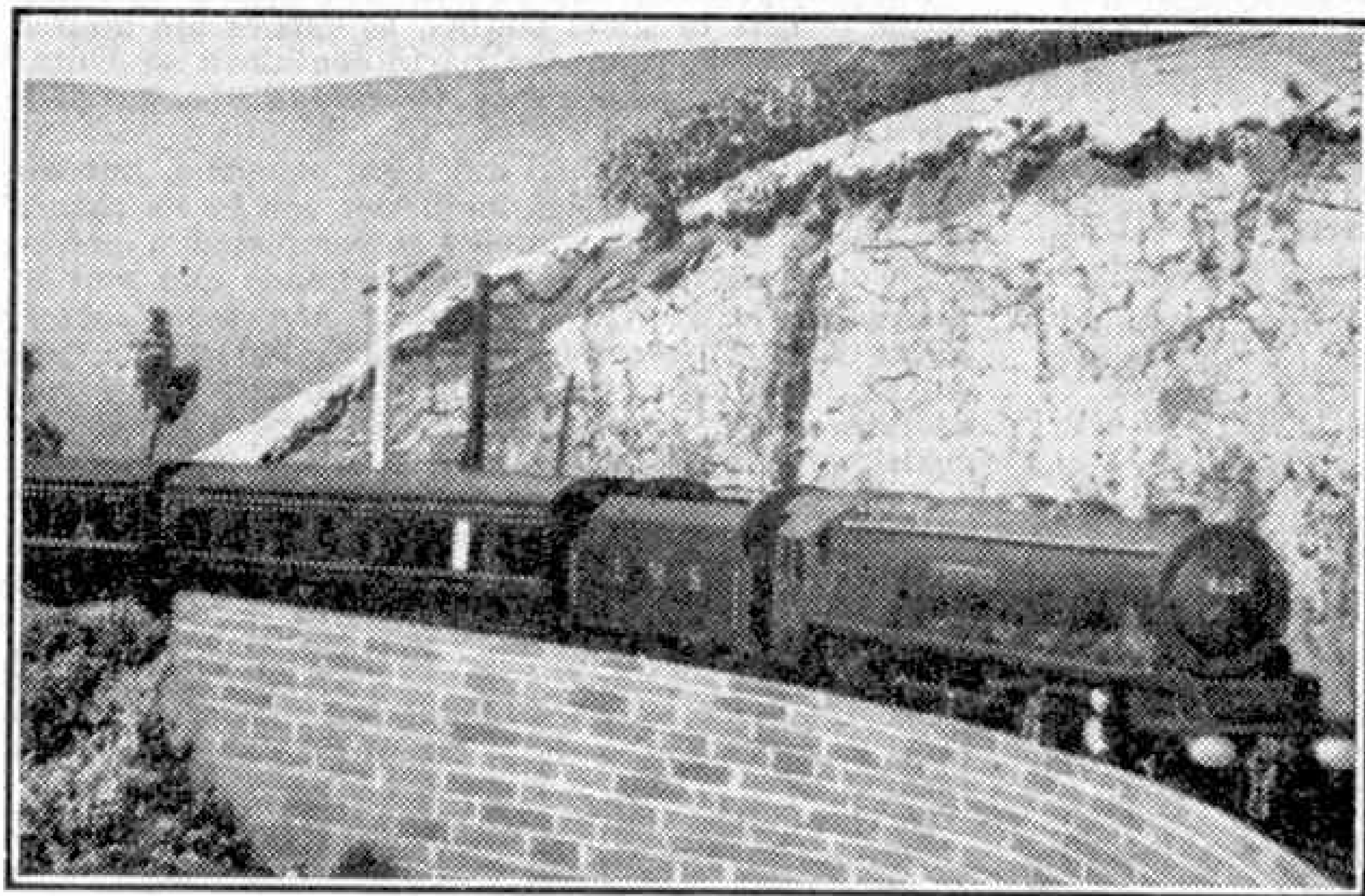


Fig. 3. An underneath view of the tractor showing the position of the Magic Motor.

Notes on Hornby-Dublo Trains

WE have recently had several requests for advice about screwing down a Hornby-Dublo layout to a baseboard. Except where lineside scenery is to be introduced as a more or less permanent feature, the screwing-down process is quite simple; but some readers have complained of short circuits that did not exist on the layout before it was fixed to the baseboard. Sometimes the trouble is due to the actual screwing. Round-headed wood screws No. 2 size, $\frac{3}{8}$ " long, are just right, but they must be driven quite straight. A screw put in crooked can put the track out of line, and in extreme cases its head may actually touch the collector shoe of the engine, thus causing a short circuit.



A Hornby-Dublo "Duchess of Atholl" Locomotive and train on the layout of E. K. Ellis, Belfast.

On curves the leading collector shoe always projects to one side of the centre rail to some extent, and it may easily touch the head of a screw not properly driven.

If the screws are slack the track can move slightly as a train passes, and then a screw head may touch the centre rail and cause trouble. Therefore drive the screws well home, but not so far that they cause distortion of the track. It is of course very important that the baseboard should be firm and level.

In spite of all instructions and advice, many Hornby-Dublo owners still fail to keep their locomotives and rolling stock lubricated. We have had several locomotives returned to us with a complaint that they would hardly run at all, and inspection

has shown that the mechanism was absolutely dry. As soon as these engines have been lubricated they have started to run perfectly. No machine or mechanism will operate well, if at all, unless its moving parts have a film of oil.

We have also found that while most Hornby-Dublo owners lubricate their engines, there is a tendency to neglect the rolling stock. Vehicles that run dry are noisy, do not move easily, and impose an unfair drag on the engine, which of course gets blamed for failure to haul its train properly. The axle bearings and pivots of rolling stock bogies, and also automatic couplings, should all have their little drop of oil, applied by the wire dipper provided

in the oil bottle supplied with the train set. By the way, when the supply in this bottle has been used up do not throw bottle and dipstick away; refill the bottle with a light oil of good quality such as is used for sewing machines. The dipstick is far better than an oilcan; by means of it oil can be placed just where it is wanted, and in the small quantity required. If by chance you have lost your dipstick, a matchstick sharpened to a point will do quite well.

While a small film of oil is necessary on all moving parts, one should not be too generous in its use, as over oiling can cause a great deal of trouble. From the axle bearings, for instance, it will find its way round the wheels and on to the track, with the result that the driving wheels of the engine slip. If, however, this happens the only cure is to wipe over all rails and wheels very thoroughly with a clean dry cloth. If the excess of oil is great, this wiping may have to be repeated after further spells of running.

Lubrication of the armature spindle top bearing is specially important, as neglect means harsh, poor running. Here again too much oil will lead to trouble, this time in the form of a dirty commutator and brush gear. These parts must be kept free from oil.

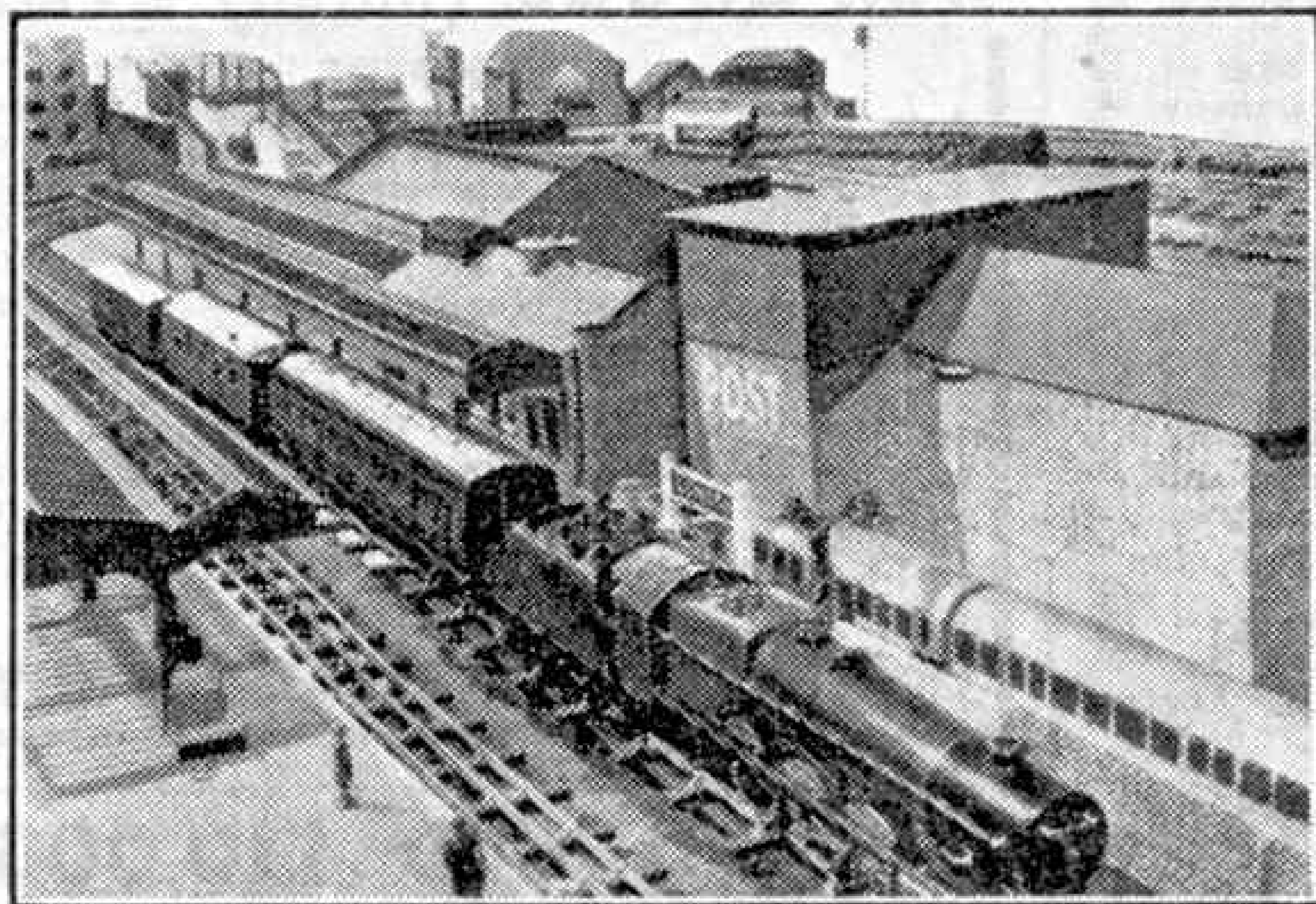
A Hornby Electric Railway

THE pictures on this page show part of the gauge 0 electrically-operated layout owned by "M.M." reader Sgt. S. E. Tomlin, at present serving in the R.A.F. The system has an oval double track main

own 20-volt Transformer, there being insulating gaps at the junction to keep the circuits separate. The sidings as a whole form another separate section and special switch arrangements allow them to be powered from either transformer according to the requirements of the moment. The sidings and the platform lines are divided into sections so that an engine can be held almost anywhere on a given stretch of track. This allows a main line train to arrive headed by the 4-6-2 "*Princess Elizabeth*" shown in the station view; the section on which the engine comes to rest can be switched out and so another engine can come on at the other end and draw the "empty" train away to the sidings.

Hornby locomotives and rolling stock are used almost exclusively in the working of the line, the principal engines being the 4-6-2 "*Princess Elizabeth*," and a 4-4-2 E220 Special Tank. Buildings, stations and various accessories have been made at home in wood. This material also was used for the "Underground" train and also for one or two motor buses among the road traffic.

Dinky and Supertoys vehicles are used in the yards and on lineside roads.

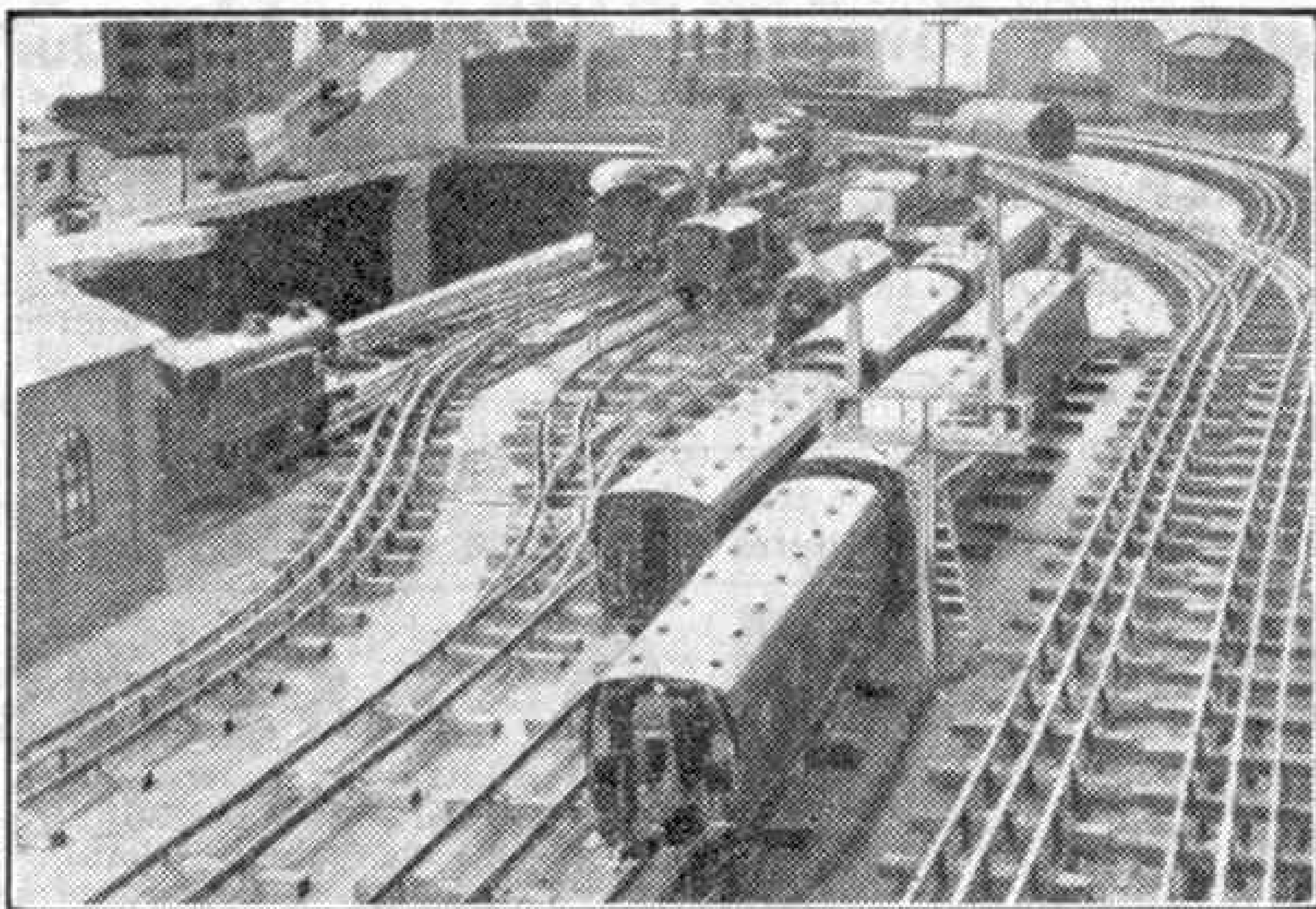


"London," the passenger station on the layout of Sgt. S. E. Tomlin, R.A.F. The engine is a Hornby "Princess Elizabeth." Photographs by H. Carter, Ealing.

line well suited to continuous running. An inner pair of tracks branch off from the main circuit at the junction shown in the lower illustration; and after passing through one side of the station they resolve themselves into a series of sidings.

The passenger station has four main line platform faces and part of them can be seen in the upper photograph. An interesting feature at the end shown is a bay platform specially provided for "Underground" trains. The track serving this represents a short surface section of an underground electric system. After leaving the station, it dives away down under the sidings to the supposed "Tube" level. The London Transport type train standing in the "Underground" bay is thus more or less an ornament, but it does give quite an "inner suburban" look to the station. The latter incidentally is called, simply, "London."

Each main track has its



A general scene across the sidings in which Hornby locomotives and rolling stock are prominent.

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Stamp Collecting

Scouts and Guides on Stamps

By F. Riley, B.Sc.

THE Scout stamp from Australia illustrated in last month's "Stamp Gossip" draws attention to Boy Scout and Girl Guide stamps in general, which probably are more numerous than is realized by the average collector. There are in fact more than 50 of them. Others no doubt will follow, and a good collection well displayed undoubtedly will always be of the greatest interest.

Needless to say, no Scout stamps have appeared in Great Britain, where special commemorative stamps of any kind have been very few in number. For stamps in the collection we have in mind it is necessary to go overseas, and the first that should be mentioned come from South Africa. These were two stamps produced in Mafeking during the siege of 1900. This of course was before the foundation of the Scout movement, but one of the stamps bears the portrait of General Baden-Powell, its founder, and the other shows Sergt.-major Goodyear on a bicycle. The Sergt.-major acted as messenger during the siege. The two stamps are perhaps beyond most junior collectors in price, but if they can be obtained they should certainly head the collection.

Scouting began in 1908, but it was not until 1925 that another stamp for a Scout collection made its appearance. This happened in Hungary, where a series of stamps showing sporting scenes was issued in that year. One of these, the 1,000 kr. value, shows a bugler in a Scout camp. Like the rest of the set it was sold at twice its nominal rate; the premiums were used to aid sports associations in Hungary. This beginning was followed eight years later by the appearance in the same country of an entire set of five Scout stamps, celebrating the 1933 International Jamboree.

One design, showing a leaping white stag, was used throughout the series. This good example was followed in 1939 by a set celebrating a Girl Guides' rally at Godollo, to which the name "Pax Ting" or Parliament of Peace was given.

In the meantime Scout stamps had begun to appear in other countries. One of the strangest examples came from Russia. There the Scout movement was officially banned in 1922, but seven years later two stamps were issued to mark what was called the first All-Russian Gathering of Pioneers. The design shows a trumpeter sounding the assembly, and he is wearing Scout uniform. The neighbouring country of Lithuania, then independent, did better than this in 1938 by issuing a set of four stamps,



sold at a premium in aid of a fund for national camps for Scouts and Guides. The designs were those of a National Olympiad issue of the same year, and to mark their special nature two of the stamps were overprinted with words meaning "Scouts' National Camp," and the others with an inscription meaning "Guides' National Camp."

The country that has been most active in the issue of Scout stamps is

Rumania, a land of many commemorative issues. The first series came in 1931, and four others appeared by 1938, making altogether 31 stamps. The designs are all excellent from the Scout point of view. Stamps of the first issue show a Scout encampment, recruiting and rescue work. The set of the following year commemorated a national Jamboree, and these stamps were even better, the four lowest values showing Scouts in camp, a signaller at work, cooking by the camp fire and trailing. Six stamps of 1934 repeated these designs, with the overprint "Mamaia 1934," the place and year of the Jamboree celebrated by the issue, and yet another Jamboree, this time at Brasov, was celebrated in 1936 by three stamps, the designs of which show various Scout badges. Then in 1938 came a set of 11 stamps, seven of which carried premiums in aid of Scout funds, although the designs showed portraits of famous Rumanians. This set presumably will be the last of the Scout issues of Rumania, which is now under Russian domination.

Of the countries of Western Europe only Holland and France have distinguished the movement by direct recognition on stamps. The Fifth World Jamboree was held at Vogelenzang, in Holland, in 1937, and to celebrate it there was an issue of three stamps. Of these the 1½ c. value shows the Scout Tenderfoot badge; on the 6 c. a hand beating a drum is seen, with flags behind; and the 12½ c. value portrays the head of Hermes, the messenger of the Gods of Ancient Greece. These stamps appeared on 1st April, 1937, and were followed a month later by two Scout stamps issued in the Dutch Indies. French recognition came in 1947, the year of the Jamboree of Peace held in the Forest of Moisson. There was only one stamp, and the principal feature of the design was the Scout arrowhead.

Our last example of a Scout stamp comes from Turkey, the 8 k. value of a series issued in 1938. The New Zealand Health stamps of 1944 also are suitable for our collection, as on them Princess Elizabeth and Princess Margaret Rose are shown in Sea Ranger and Guide uniforms.





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Stamp Gossip and Notes on New Issues

By F. E. Metcalfe

THERE is supposed to be less money about this year, though bank figures do not bear out this belief, so it was reasonable to think that prices for postage stamps would fall. Nothing of the kind has actually happened as far as the majority of stamps are concerned, and alas it looks as though it is going to cost us more than ever to fill those blanks. Some writers on philately are beginning to wonder where it will all end. They need not worry, for such things automatically adjust themselves, and in the meantime we shall be acting sensibly if we just confine our purchases to stamps which we can afford. After all, stamp collecting is just a hobby.

Some time ago it was mentioned that it took thousands of dollars to send an ordinary letter through the post in China. Mr. Tan King Meng, a reader in Malaya, has kindly sent a cover which had stuck upon it two stamps of 50,000 dollars each, and another for a million dollars. This is by no means a record, for it is mentioned in the "Stamp Mirror" that a letter received in Singapore actually had stamps affixed to the value of 105 million dollars. At the time this little lot was worth about four Malayan dollars, or 9/4 in British currency. Now all those fantastic figures are altered for the moment by the issue of a new currency based on the Gold Yuan.

Collectors were very perturbed when all those high values were announced for the "Silver Wedding" anniversary, and our Crown Agents, who had nothing whatever to do with the decision, received letters of protest from all over the world. It is said that those which came from the U.S.A. were the most pungent, for collectors there imagine that they will be taking most of the stamps sold to stamp enthusiasts and thus think that they have something to do with the calling of the tune. As a matter of fact they will not buy 10 per cent. At the same time the authorities apparently have taken some notice of somebody's protests, for while several commemorative sets have been announced recently, in each case they have been for stamps of modest face value.

A case in point is the splendid little set issued on 12th January for British Honduras. Six stamps are concerned, and the total face value is only about 1/10. As can be seen from the illustration, the stamps are quite handsome; very different from the Eleutherian set of Bahamas, which is still being criticised. The Honduras set commemorates the 150th anniversary of the Battle of St. George's Cay. Truth to tell, we probably issued this set to remind certain quarters that we have been in that part of the world a very long time indeed, and by inference we can see that we are going to remain too. As a matter of fact,

small as was the battle of St. George's Cay by modern standards, it was really a great victory against odds.

A rather surprise announcement was the notice of the Crown Agents that a long set of stamps—13 values, plus seven postage dues—were to be issued for use in the former Italian Colony of Cyrenaica. At the time these notes are being written it has not been decided if we shall retain our occupation of this territory, but this set of definitive stamps seems to point to the fact that at any rate we expect to get the mandate. Stamps up to 20 mils will be of the same size as our own 1d. stamps, whereas those above this will be larger, like our own high values. All the stamps will have the same design, which will be a picture of a Mujahid, or native warrior.

Another surprise was the news that Jamaica is to have a £1 stamp. It will be a pictorial, with brown centre and violet border, and apart from the King's head the design will illustrate tobacco growing and cigar making. This is not to be wondered at, for most governments are fully alive to the publicity possibilities of postage stamps, and as can be seen from our own tobacco shops, Jamaica is striving hard to oust Cuba, which is in the dollar area, as our first supplier of fine cigars. Cuba does not forget her cigars when planning stamp issues, as one of our illustrations shows. The stamp is one of a set of three issued in December 1948.

Apparently the mail load at Christmas and New Year was heavier than ever, not only at home but in some of the Dominions as well. Canada, ever up and doing, has shown a good deal of enterprise in trying to educate the public to "Post Early." An

idea used there might well be tried by our own authorities. In Canada the Post Office prepared a number of slides and these were shown in various theatres. One quoted by "Linn's Weekly

Stamp News" reads as follows: "A late gift looks like an afterthought—Post Early." Those of us who have had to scuddle round trying to find a Christmas card to match one which has been received unexpectedly from a friend, who did not receive one from us, will feel the appeal of that apt slogan.

The fact that Gibbons have priced the cheapest "Penny Black" at 60/- has caused quite a stir among most collectors. Of course, if you have a copy—and many readers have, for the stamp is really quite common—which has not got four clear margins, etc., it is not likely to be worth anything like that sum. It is amazing how the value of this stamp has zoomed since the days, in this writer's lifetime, when nice copies were to be had for 6d. each.

Our last illustration shows a stamp issued in the United States in honour of Juliette Gordon Low, founder of the Girl Scouts over there. This lady established the first American company of girl guides in Savannah, Georgia, in 1912.

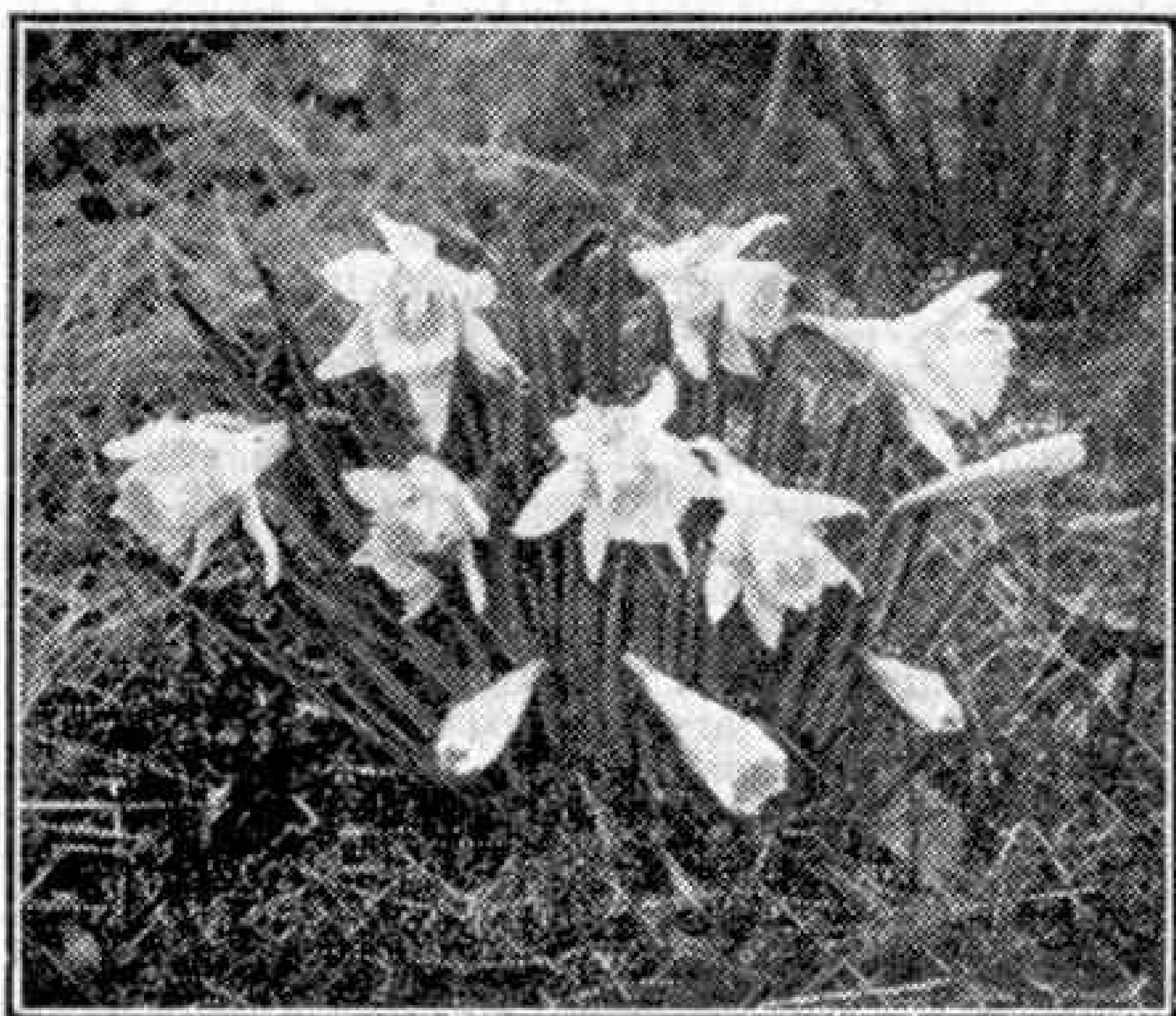


Photography

Making Your Pictures Tell a Story

THE photographing of whatever takes one's fancy is very enjoyable and fills the album with a remarkable variety of subjects, but I think much more interest can be had by taking series of pictures of special subjects. For instance, if you have a pet dog or cat—or may be a rabbit!—you can take a series of photographs showing it in different attitudes and moods. A group of related pictures of this kind makes a most attractive page in the album.

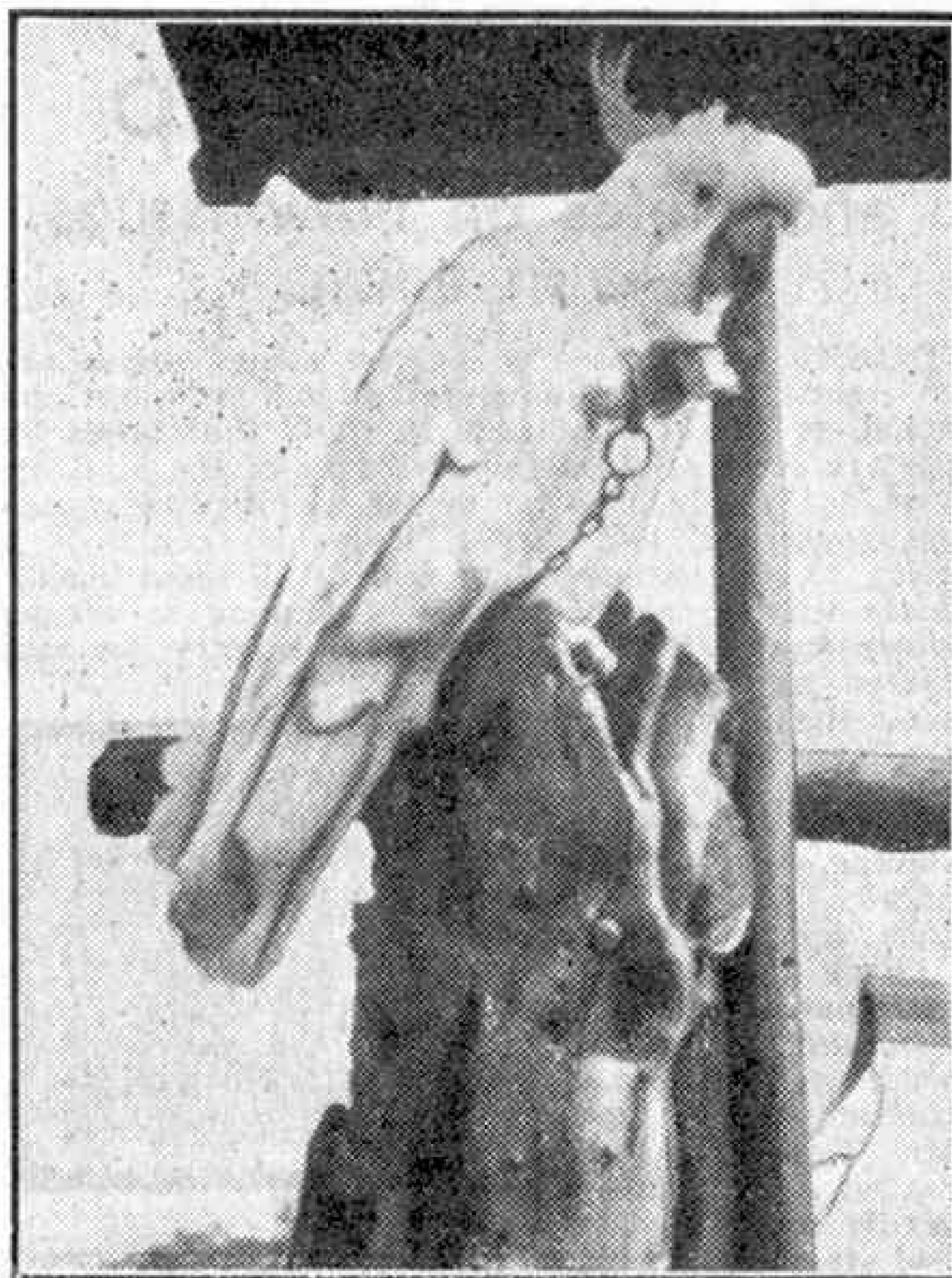
If you are a football enthusiast the camera can give you a lasting record of your favourite team, individually and collectively, in action, with pictures such as the excellent one at the foot of this page to



Daffodils. Photograph by R. Wrigley, Clitheroe.

remind you of exciting moments in matches you have attended.

Perhaps you are interested in old churches and historic buildings; then your camera can be a most useful ally in recording your "discoveries." Many years ago I secured a most interesting set of pictures, including both interior and outside views, of an old priory that was about to be demolished to make way for a housing estate. I revisited the old place several times while demolition was in progress and took photographs of its gradual disappearance, until, in the final picture, all trace of the old priory has gone, and the erection of the first of the houses indicates the coming of the "new order." The taking, developing and printing of those photographs gave me the utmost enjoyment, and the complete set of prints proved of great interest to many of the people who came to live in the new houses



A Yellow-crested Cockatoo photographed at the London Zoo by B. B. Foskett, East Putney, London S.W.15.

In most hobbies photographs can add greatly to the interest by enabling one to compile a pictorial record. This is particularly true of nature study, any branch of which has endless possibilities.

Most indoor hobbies lend themselves to photographic illustration, and I often wonder why collectors of various articles—stamps, coins, etc.—make so little use of their cameras. This applies also to Meccano model building. When a really good model has been built it is surely worth while recording it by one or more photographs before taking it to pieces and starting on a new model. The interesting pictures of Hornby railways that appear month by month in the "M.M." show that this hobby also has great photographic possibilities. The most successful pictures of this kind are those that show only a portion of the layout. Three or four really sharp views of sections of the railway are usually much more interesting than a photograph taking in the whole scheme.



No goal! A fine action photograph by T. F. Rice, Rushden, Northants.

From Our Readers

This page is reserved for articles from our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or experience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs for use as illustrations. Articles published will be paid for. Statements in articles submitted are accepted as being sent in good faith, but the Editor takes no responsibility for their accuracy.

BERE REGIS CHURCH

Almost hidden from sight in the little Dorsetshire village of Bere Regis is one of the most famous churches in Wessex. This is famous in history and

for Thomas Hardy mentions it in "*Tess of the D'Urbervilles*," and the tomb of one branch of that family is to be seen in the south aisle of the church. The accompanying illustration shows four of the Apostles and the plaque already mentioned also can be distinguished.

J. J. CURTIS (Leigh-on-Sea).

THE "EDWIN FOX"

Lying in the shallow waters of Queen Charlotte Sound, near the freezing works at Picton, South Island, New Zealand, is the picturesque hulk of the "*Edwin Fox*." This vessel was built at Calcutta, Bengal, in 1853 for the famous East India Company, but was registered at Southampton. The vessel spent most of her very useful career on the Indian run. She was chartered by the Government to carry troops during the Crimean War, and in 1861 she carried rice from Bangkok, Siam, to India to help the starving natives of the North West Province. Eight years later she was sold and began running to New Zealand carrying emigrants to that country.

After she had sailed the seas for 32 years, the vessel, still sound, started a new life. She was fitted for refrigeration and sent first to Port Chalmers, and then to three different ports in New Zealand. On 12th January 1897 she arrived in Picton after being towed by a collier for four days from Port Chalmers. In Picton she was used to freeze the sheep carcasses which came from Spring Creek, some 15 miles away. In 1899 freezing works were built ashore and the freezing machines were removed from the "*Edwin Fox*." Since then she has done duty as a landing stage and a storehouse for coal for the works. To-day only her hulk remains, her masts and deck structures having been removed, but her teak planking is as solid as on the day she was built and is a testimony to the good work of her builders. Many other noted sailing ships were finally converted into hulks, but of most of her contemporaries we have nothing but dim memories.

R. MATHEWSON, (Picton, N.Z.).



The interior of Bere Regis church, showing four of the 12 wooden figures of the Apostles erected on the carved beams of the roof. Photograph by J. J. Curtis, Leigh-on-Sea.

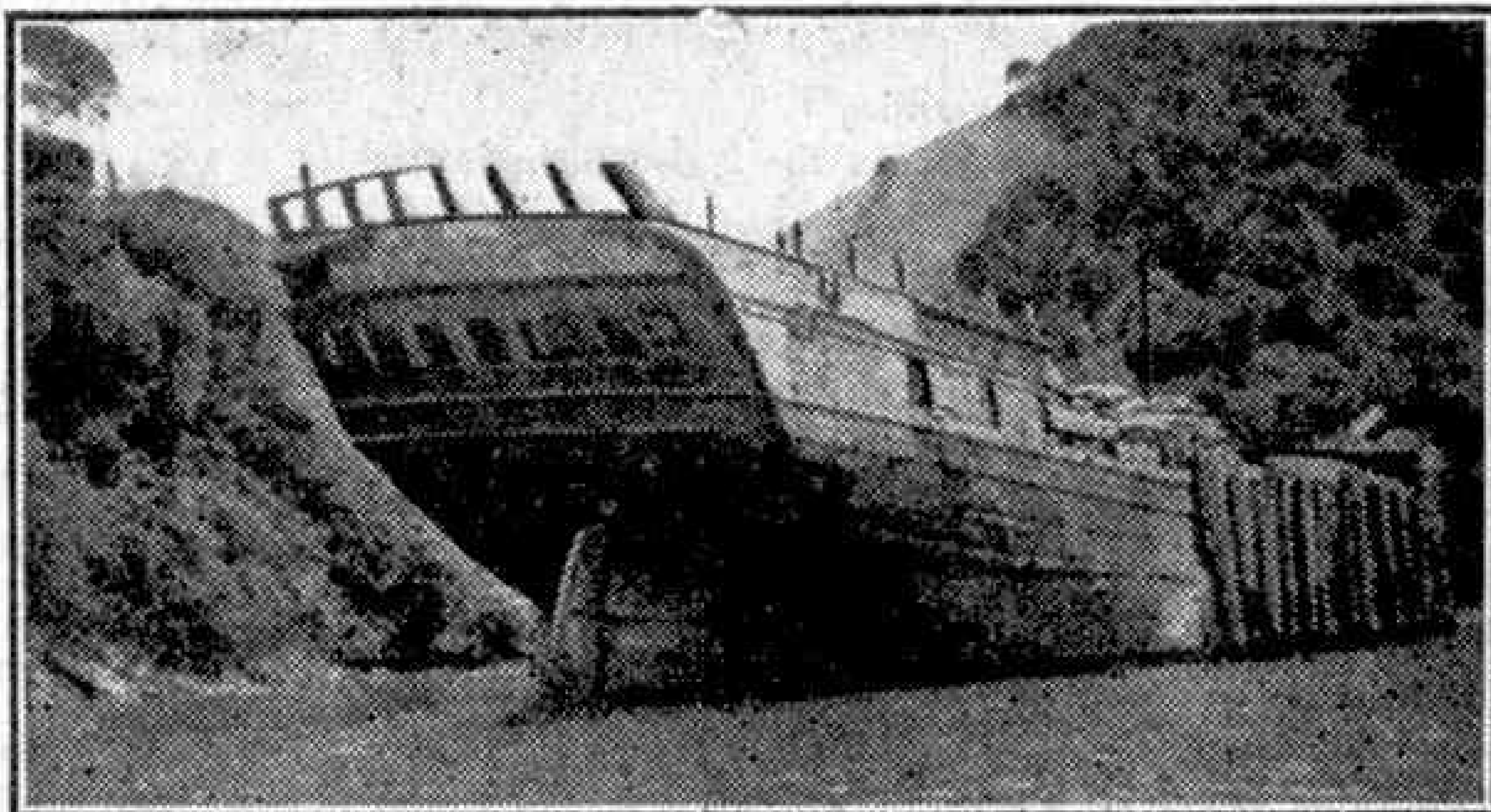
literature, and also for its wonderful handwork in stone and wood.

The edifice is very old. In 1480 the incumbent was John Morton, a great figure in English history at the time of the Wars of the Roses. He was a Lancastrian, and at one time was banished from the country by the Yorkist king. Later he helped to arrange the marriage of Henry Tudor, and he played a great part in setting Tudor on the throne as Henry VII. He became the king's chief minister and was appointed Archbishop of Canterbury in 1486. Three years later he became a Cardinal.

The roof of the church is of carved oak beams and is adorned with twelve outstanding figures of the Apostles, each jutting out from the side walls and looking down and across the nave. It is said that Morton brought these figures from Flanders and had them erected in their present position. They are life-size, beautifully carved and painted, and despite their age they are in extremely good condition.

In the centre of the chancel wall is a large plaque with a carving of a man's head on it. According to local report this represents the head of John the Baptist. On each pillar grotesque faces are carved in the stone work, and these and the Norman arches are in a wonderful state of preservation.

The church figures in literature,



The hulk of the "*Edwin Fox*" in Queen Charlotte Sound, New Zealand. Photograph by R. Mathewson, Picton, N.Z.

Competitions! Open To All Readers

Prize-winning entries in "M.M." competitions become the property of Meccano Ltd. Unsuccessful entries in photographic, drawing and similar contests will be returned if suitable stamped addressed envelopes or wrappers are enclosed with them.

Doublets

This month we return to Doublets for our principal competition. Many readers of the Magazine will already be familiar with the idea of these, but for the benefit of others they may be simply explained as follows. In a Doublet there are two words, and one of them is to be changed into the other through a series of intermediate words or links, each of which differs from the link before it by one letter only. The two words in a Doublet therefore must have the same number of letters, and the idea is to make the change in as few steps as possible.

An example will make this quite clear. Change LEAD into GOLD: here the intermediate steps or links could be bead-bend-bond-bold, four in number. Actually it is possible to pass from LEAD to GOLD with fewer links than four, and in finding the solutions to the Doublets shown in the panel on this page entrants should

Change	RAIN	to	HAIL
Make	SHAM		REAL
Bring	HEAD	to	TAIL
Send	WIRE	to	MOON
Find	CASH	for	RATE
Can you	PIPE	a merry	NOTE?
Make	WOOD	into	POLE
and	LAND	into	PARK
Change	FOUL	to	PURE
Spend	LOAN	on	FOOD

always examine their first efforts carefully to make sure there are no short cuts. Finding these may help to win a prize.

In making links only English words appearing in a standard dictionary may be used, and the names of persons or places are not allowed. In judging, one mark will be given for each link, and the prizes will be awarded to the senders of the lists in which the total number of links is lowest. In the event of a tie, preference will be given to the entry or entries with the neatest or most novel

arrangement.

The Contest is divided into two sections, for Home and Overseas readers respectively, and in each prizes to the value of 21/-, 15/- and 10/6 will be awarded for the best solutions. Entries must be addressed "March Doublets Competition," Meccano Magazine, Binns Road, Liverpool 13." The closing dates are: Home Section, 30th April; Overseas Section, 30th July.

A Railway Quiz

Can you answer the 12 railway questions given below? You will certainly enjoy trying to answer them, and finding the solutions should not be beyond "M.M." readers, although some of the queries are not quite so simple as they look.

1. What are the chief points served by "The South Yorkshireman" and which Region operates this train?
 2. What is a "motor train?"
 3. Which railway first used the 2-6-0 locomotive in Great Britain?
 4. What is a Mansell wheel, and which railway first used this type?
 5. What is the highest summit level reached by a British main line? Where is this?
 6. The term "pilot engine" can have several meanings; how many do you know?
 7. What were "Parliamentary" trains?
 8. A famous G.W.R. engine once had a bogie tender; which was it?
 9. On a rail journey between two cities it is possible to see two transporter bridges. What are the cities and where are the bridges?
 10. What line did the initials C.K. & P.R. stand for?
- Competitors should not trouble to write down the whole of each question on their entries. It will be

sufficient to give the numbers of the questions and set down the answers against these.

There will be the usual two sections in this competition, for Home and Overseas readers respectively, and in each prizes will be awarded of 21/-, 15/- and 10/6 for the best entries in order of merit. In addition, consolation prizes will be given for good efforts that fall just short of the prize-winning standard. Closing dates: Home Section, 30th April; Overseas Section, 30th July.

March Photographic Contest

The third of our 1949 series of photographic contests is a general one, in which we invite readers to send in prints of any subject. There are only two conditions—1, that the photograph must have been taken by the competitor, and 2, that on the back of the print must be stated exactly what the photograph represents. A fancy title may be added if desired.

The competition will be in two sections, A for readers aged 16 and over, and B for those under 16. Each competitor must state in which section his photograph is entered. There will be separate sections for overseas readers, and in each section prizes of 21/-, 15/- and 10/6 will be awarded.

Entries should be addressed "March Photographic Contest, Meccano Magazine, Binns Road, Liverpool 13." Closing dates: Home Section, 31st March; Overseas Section, 30th June.

Competition Results and Solutions

HOME

OCTOBER 1948 CROSSWORD PUZZLE

1st Prize: N. S. Raine, Newcastle-on-Tyne 3. 2nd Prize: M. A. Corley, Hull. 3rd Prize: J. Fry, London N.20. Consolation Prizes: A. Jones, Romford; G. W. Wilson, Wallington; G. D. Pickering, London N.14; J. H. Boyes, Manchester 21.

OCTOBER 1948 RAILWAY TERMS CONTEST

1st Prize: C. E. Wrayford, Bovey Tracey. 2nd Prize: E. A. Dudley, Gatley. 3rd Prize: A. Chatfield, Brighton 7. Consolation Prizes: D. King, Liverpool 19; B. E. Timmins, Birmingham 24; D. J. Parry, Worsley; J. K. Watson, Burley-in-Wharfedale.

NOVEMBER 1948 STORY CONTEST

1st Prize: M. X. Tranfield, Sheffield 11. 2nd Prize: R. Smith, Edinburgh 7. 3rd Prize: M. Lustig, London N.W.4. Consolation Prize: K. Adams, Reading.

NOVEMBER 1948 LOCOMOTIVE SHADOWS CONTEST

1st Prize: S. Newton, Birstall. 2nd Prize: P. L. Boskett, Bromsgrove. 3rd Prize: R. Francis, Nantwich. Consolation Prizes: R. Sumner, York; R. A. Clarke, Manchester.

NOVEMBER 1948 PHOTOGRAPHIC CONTEST

1st Prize, Section A: H. Swindlehurst, Padiham; Section B: B. B. Foskett, London S.W.15. 2nd Prize, Section A: S. S. Pethybridge, Newton Abbot; Section B: A. Hobbs, Exeter. 3rd Prize, Section A: J. Brooks, Saltcoats; Section B: K. Dexter, London N.21. Consolation Prizes: R. Miller, Purley; D. E. Wareing, Luton; E. D. G. Mason, Romford; E. Richardson, W. Bridgford; D. J. W. Brough, Cheam.

DECEMBER 1948 PHOTOGRAPHIC CONTEST

1st Prize, Section A: J. H. Boyes, Manchester 21; Section B: P. Johnson, Colwyn Bay. 2nd Prize, Section A: C. H. Thomas, Aldershot; Section B: B. Evans, Llanfairfechan. 3rd Prize, Section A: S. S. Pethybridge, Newton Abbot; Section B: D. Reed, Aberdovey. Consolation Prizes: B. J. Kinsella, Hyde; D. W. Pratt, Shipley; G. Barras, Nelson.

OVERSEAS

APRIL 1948 THRILLS CONTEST

1st Prize: L. Whalley, Auckland, W.1., N.Z. 2nd Prize: R. Hardy, Hastings, N.Z. 3rd Prize: J. Ward, Bombay, India. Consolation Prizes: L. Squires, Boksburg, Transvaal, S.A.; E. Stack, Dublin, Eire.

APRIL 1948 LOCOMOTIVE CONTEST

1st Prize: A. G. O. Guthrie, Taranaki, N.Z. 2nd Prize: J. A. Markham, Windsor, Ontario, Canada. 3rd Prize: J. A. Gomes, Bombay, 20, India. Consolation Prize: R. Ashby, Palmerston North, N.Z.

MAY 1948 STORK FIGURES CONTEST

1st Prize: B. Barrett, Taranaki, N.Z. 2nd Prize: R. D. Moffat, Dunedin W.1, N.Z.; 3rd Prize: D. Hills, North Canterbury, N.Z. Consolation Prizes: I. Boocock, Oxford, N.Z.; D. King, Matamata, North Island, N.Z.; P. Mathias, Sliema, Malta, G.C.

MAY 1948 RAILWAY CONTEST

1st Prize: D. J. White, Christchurch N.1, N.Z. 2nd Prize: J. A. Gomes, Bombay 20, India. 3rd Prize: B. Biswas, Calcutta, India. Consolation Prize: H. Garnet, Sydney, Australia.

MAY 1948 PHOTOGRAPHIC CONTEST

1st Prize, Section A: J. M. Demanuele, St. Julian's, Malta, G.C.; Section B: S. H. Stevens, Vancouver.

Canada. 2nd Prize, Section A: N. P. Milne, Hawke's Bay, N.Z.; Section B: G. Roberts, Bombay, India. 3rd Prize, Section A: B. Wills, Brisbane, Australia; Section B: J. Wilson, Halifax, Canada. Consolation Prizes: W. N. Tucker, Auckland S.E.2, N.Z.; N. A. Macdougall, Victoria, Canada; A. Holcroft, Invercargill, N.Z.

JUNE 1948 PHOTOGRAPHIC CONTEST

1st Prize, Section A: N. Tasker, East Malvern S.E.5, Australia; Section B: D. Wise, Kimberley, S. Africa. 2nd Prize, Section A: J. M. Demanuele, St. Julian's, Malta, G.C.; Section B: J. Perry, Ismailia, Egypt. 3rd Prize, Section A: N. Allcock, Dublin, Eire; Section B: S. Royden, Hamilton, N.Z. Consolation Prize: J. Cooper, San Francisco, U.S.A.

JUNE 1948 CROSSWORD PUZZLE

1st Prize: L. R. Dickson, Brooklyn, S. Africa. 2nd Prize: A. J. H. Smith, Kimberley, S. Africa. 3rd Prize: W. W. Jenson, Wellington, N.Z. Consolation Prizes: S. F. Noble, Invercargill, N.Z.; G. E. McKinnon, Sydney, Australia; R. A. Lederer, Cape Town, S. Africa.

JUNE 1948 SPORTS CONTEST

1st Prize: C. Lovett, Dublin, Eire. 2nd Prize: I. Miranda, Bombay, India. 3rd Prize: C. O'Sullivan, Dublin, Eire. Consolation Prizes: R. Rohr, Rondebosch, S. Africa; F. Searson, Dublin, Eire.

SOLUTIONS

MAY 1948 STORK FIGURES CONTEST

One thousand two hundred and ninety-four.

MAY 1948 RAILWAY CONTEST

Aberdonian, L.N.E.R.; Golden Arrow, S.R.; Royal Scot, L.M.S.; Devon Belle, S.R.; Comet, L.M.S.; Pines Express, L.M.S.; Cornishman, G.W.R.; Queen of Scots, L.N.E.R.

JUNE 1948 SPORTS CONTEST

1st. Cricket; 2nd. Cycling; 3rd. Swimming; 4th. Tennis; 5th. Rowing; 6th. Running; 7th. Walking; 8th. Bowling.

JULY 1948 "BIRD WORD" CONTEST

1. Jaywalker; 2. Railway; 3. Duckboard; 4. Henbane; 5. Swiftsure; 6. Crowbar; 7. Swanshot; 8. Swallowtail; 9. Larkspur; 10. Titbit.



June 1948 Crossword Puzzle Solution.

Fireside Fun

Conductor: "Hi, you upstairs! I thought you wanted the Town Hall."

Passenger: "Yes, that's right."

Conductor: "Come down for it, then. I can't get it up the stairs."



"Have you got another razor?"

"Why?"

"I want to defend myself."

"They weigh the anchor every time the ship leaves port."

"What a silly idea. It surely doesn't grow heavier or lighter when it is in harbour."

"Do you know you are 10 minutes late, Smith?"

"I wasn't so late really, sir. I was five minutes outside the door trying to think of a good excuse."

"Do we take this bus to the Bank, conductor?"

"No, mum. The driver will do that. You just sit inside."

"You know, that man spells fantastically."

"Good. I should be sure to get it wrong if I tried."

"If you gave your little brother five liquorice allsorts and then took three of them away, what would that make?"

"It would make him yell, sir."

"I say, that's about the 10th cigarette you've smoked to-night. I thought your doctor allowed you to smoke only five a day."

"Yes, but I fixed that. I went to another doctor, and he allows me five too."



"Golly. I've lost my voice, Sid."

"Don't worry. You'll find it in my ear."

BRAIN TEASERS

KNOWN EVERYWHERE

Of the letters of a certain word, the 3rd, 7th and 6th form a word meaning study, the 4th, 5th, 6th, 7th and 2nd one meaning a vessel, and the 1st, 5th, 3rd and 2nd one meaning a spice. There are seven letters in the word, which is a name of world-wide fame. What is it?

K.J.B.

PENSIVE WORK

A farmer made four square sheep pens in a row, using 13 hurdles in all to construct them. Then he wished to increase the number of pens to seven, all of the same shape and size, and managed this with only one additional hurdle. How did he do it? All the hurdles were of the same size, and the pens of the second set were of a different shape and size from the first.

S.W.C.

QUEER MONEY!

In Simplitanian money a gloof is the same as 20 rambics, and 36 quertons would be a quarter of a drulitch; a drulitch is 25 rambics. Which would you rather have, a drulitch or a couple of gloofs? How many quertons would you want in exchange for a gloof?

EASING THE WAY

The following line of letters has been made by omitting all the E's from a sentence of seven words, and then closing all the letters together:

THLPHANTMRGDFFROMTHVRGRNFORST

Can you make this read sense by restoring E's in the right places?

B.I.N.



"Had an accident, George?"

"No sir."

"Then how did you get this way?"

"Bull tossed me over the hedge."

"Sounds like an accident to me."

"But the bull did it on purpose, Sir."

SOLUTIONS TO LAST MONTH'S PUZZLES

Of the four batsmen in our first puzzle last month, Arthur made 42 runs, Bill 36, Charles 18, and Dick 12.

The pictures jumbled in our second puzzle are OLIVER TWIST; THE WAY TO THE STARS; LIFE WITH FATHER; FALLEN IDOL; and BULLFIGHTERS.

In Dizzy Village the baker is Mr. Porter, the porter is Mr. Baker, the doctor is Mr. Butcher and the butcher is Mr. Doctor.

THIS MONTH'S HOWLER

A pathologist is a man who walks about in a public park to keep people off the grass.

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Magazine No. 9

MODELRAFT

List for 1949

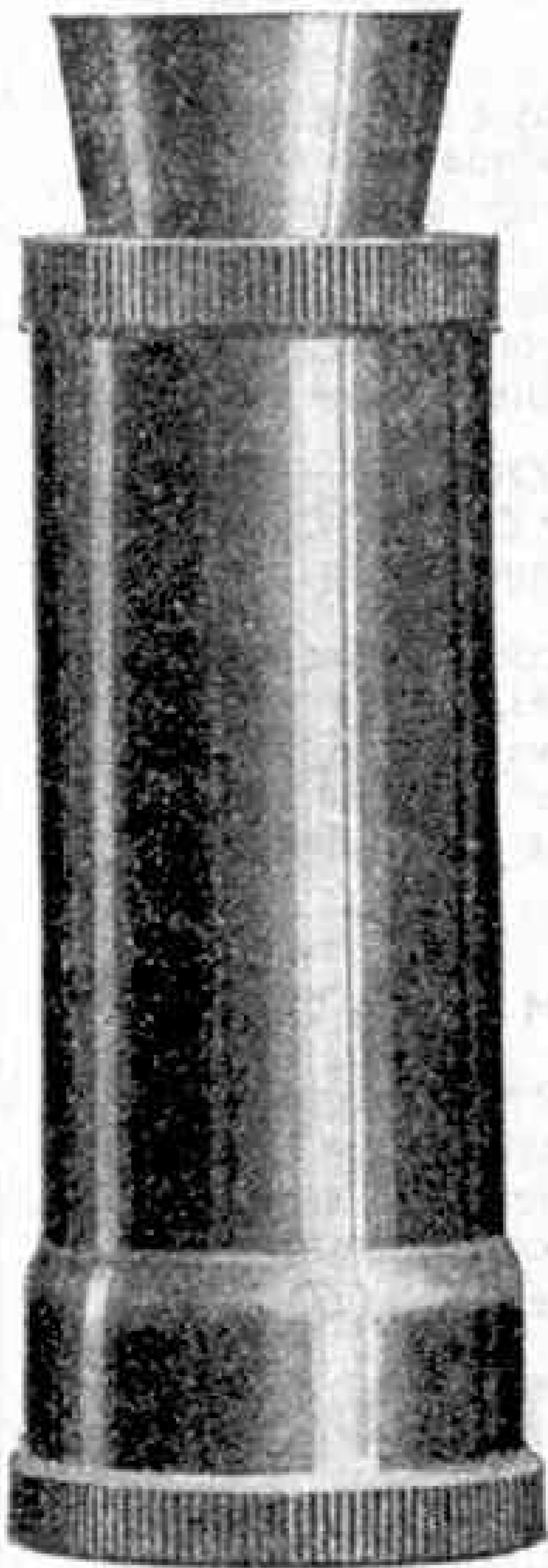
IN order to make the best possible use of our paper ration we are now publishing our magazine and list separately. The list now contains over 500 items, plans, plan-books, kits and accessories, and in order to do justice to them we have run to 48 pages and many more illustrations. The additions to the list every quarter will form a supplement to the magazine which will also be considerably enlarged. The complete list for 1949 and the magazine cost 1/- each from your modelshop or post free direct from us. A subscription for four issues of the magazine and the complete list, however, is only 4/6 post free.

Modelcraft Ltd.

77 (H), Grosvenor Rd., London S.W.1

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S.E.L. Plastic Telescope and Pocket Compass



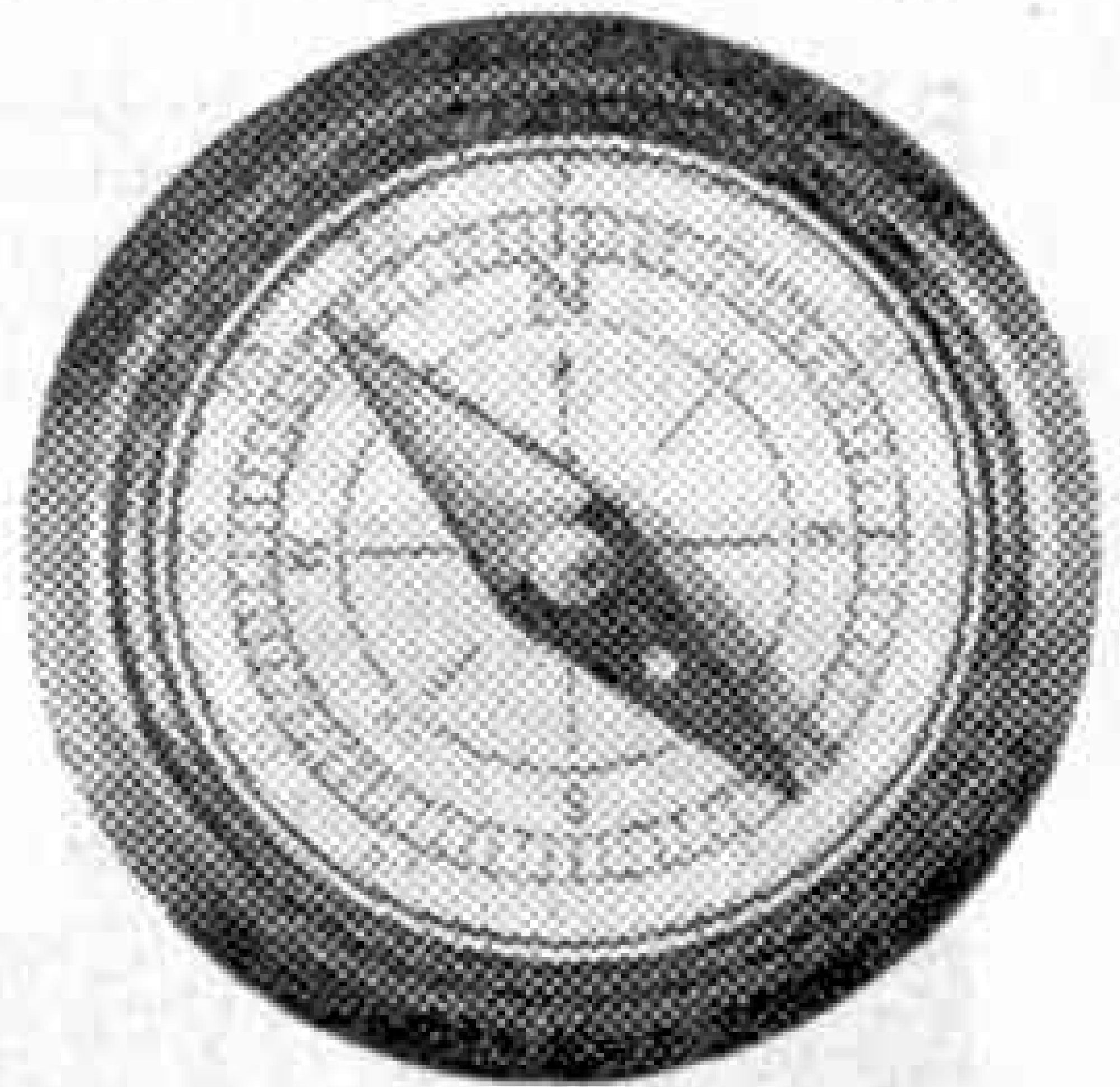
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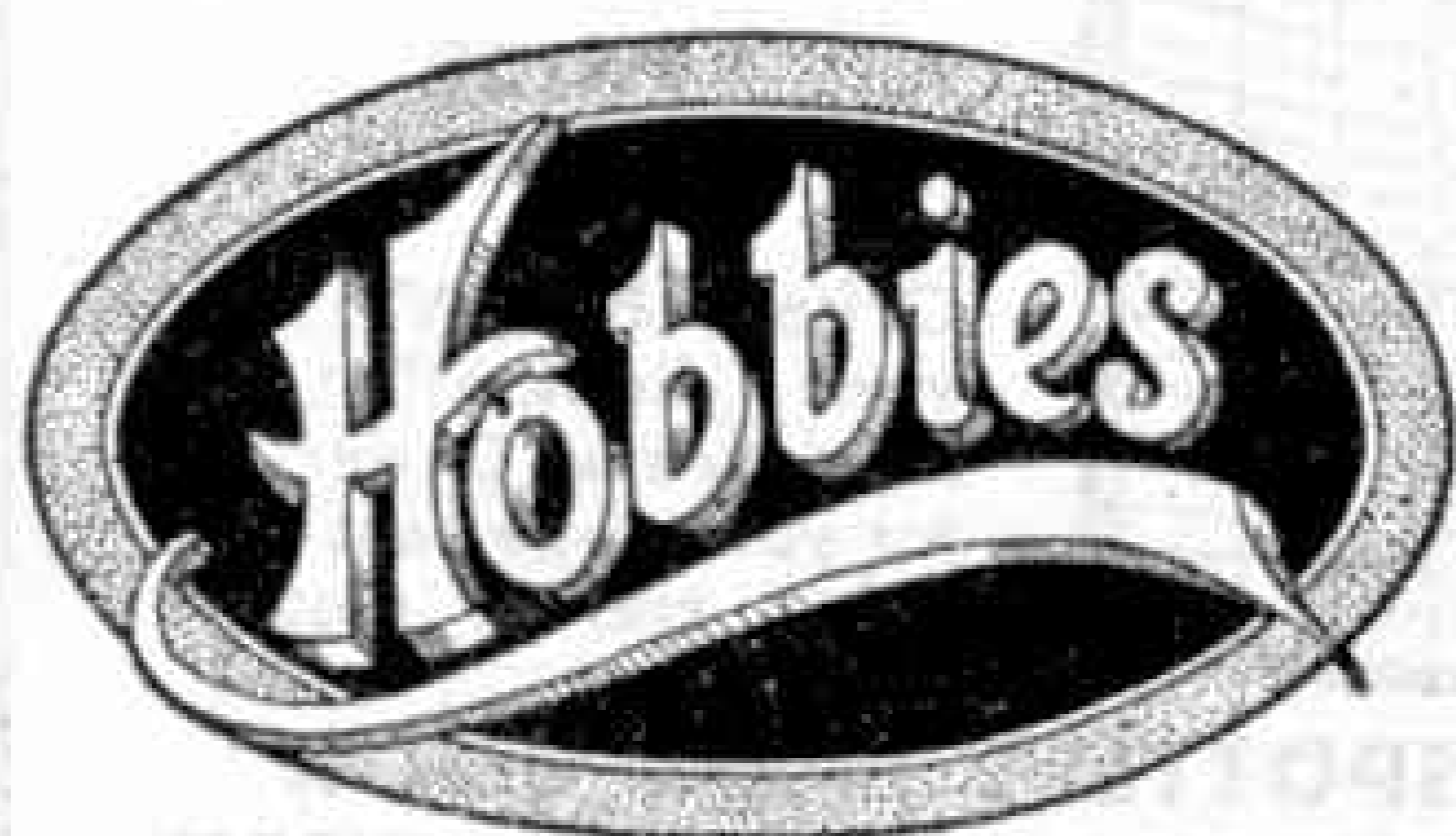
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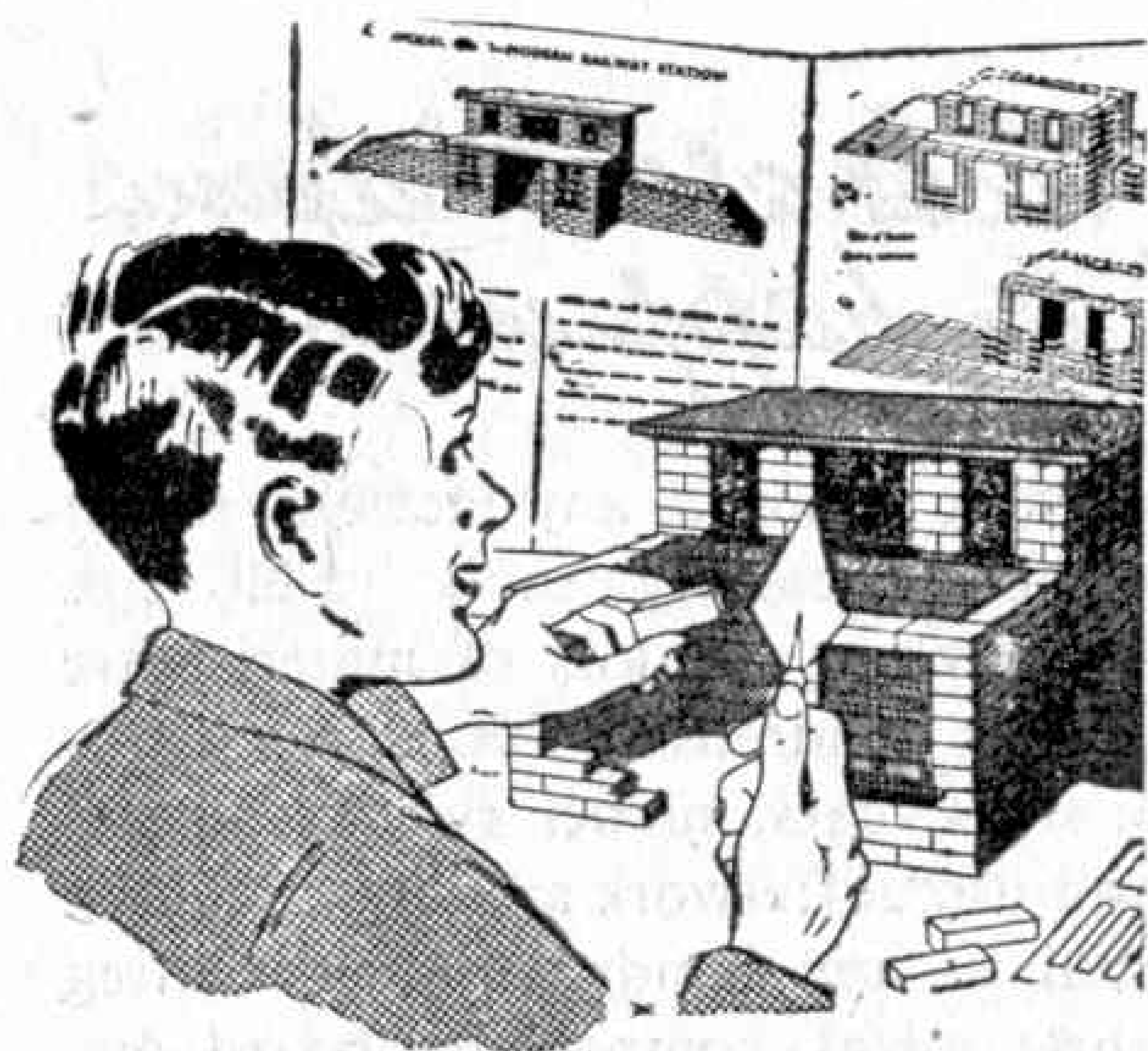
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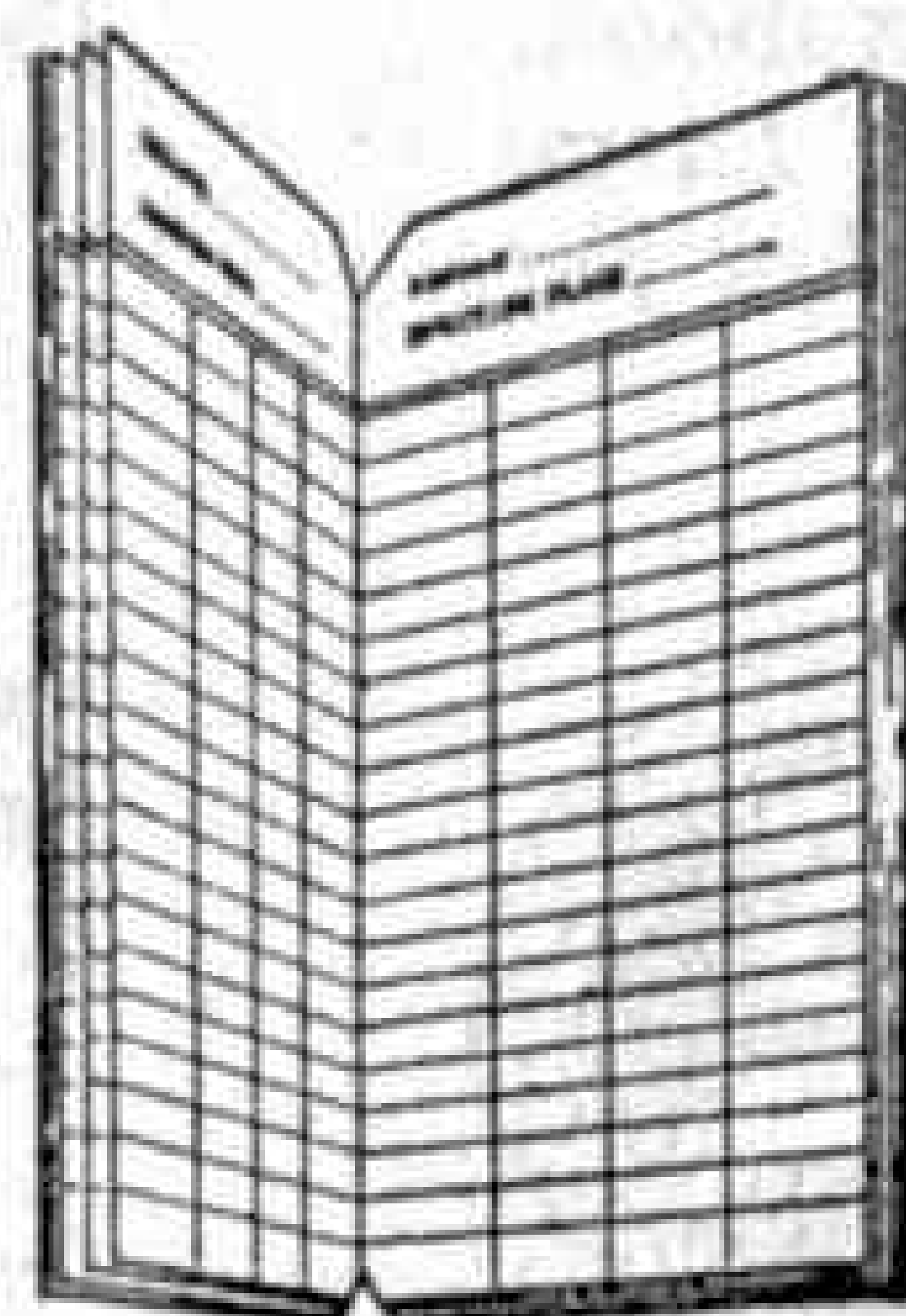
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Building Toy
for Younger Folks



Simplicity is the keynote of this fascinating building system. With Dinky Builder hinged plates and rods, the youngest children can build all kinds of models with the greatest ease—Furniture, Buildings, Windmills, Wheel Toys and scores of others.

The parts are beautifully enamelled in blue and yellow. They can be used over and over again. Nuts and bolts are not used in this system.

	Price, incl. Tax
No. 1 Dinky Builder Outfit ..	10/6
No. 2 Dinky Builder Outfit ..	21/-
A No. 1 Outfit can be converted into a No. 2	
Outfit by the addition of a No. 1A Accessory	
Outfit.	Price 10/6 (incl. Tax).

MADE IN ENGLAND BY MECCANO LTD.

HORNBY
DUBLO

ELECTRIC TRAINS

Obtainable
ONLY
from Meccano
Dealers

Supplies of these trains and of accessory equipment will be made available as soon as possible after prices can be determined on the basis of the Budget statement on Purchase Tax.

Home Supplies must remain very limited because Export still has preference.



- ① EDP2 Passenger Set, L.M.S. "Duchess of Atholl." Price 190/- (including tax)
- ② EDP1 Passenger Set, L.N.E.R. "Sir Nigel Gresley." Price 167/6 (including tax)
- ③ EDG7 Tank Goods Set, L.N.E.R., L.M.S., G.W.R., S.R. Price 135/- (including tax)

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